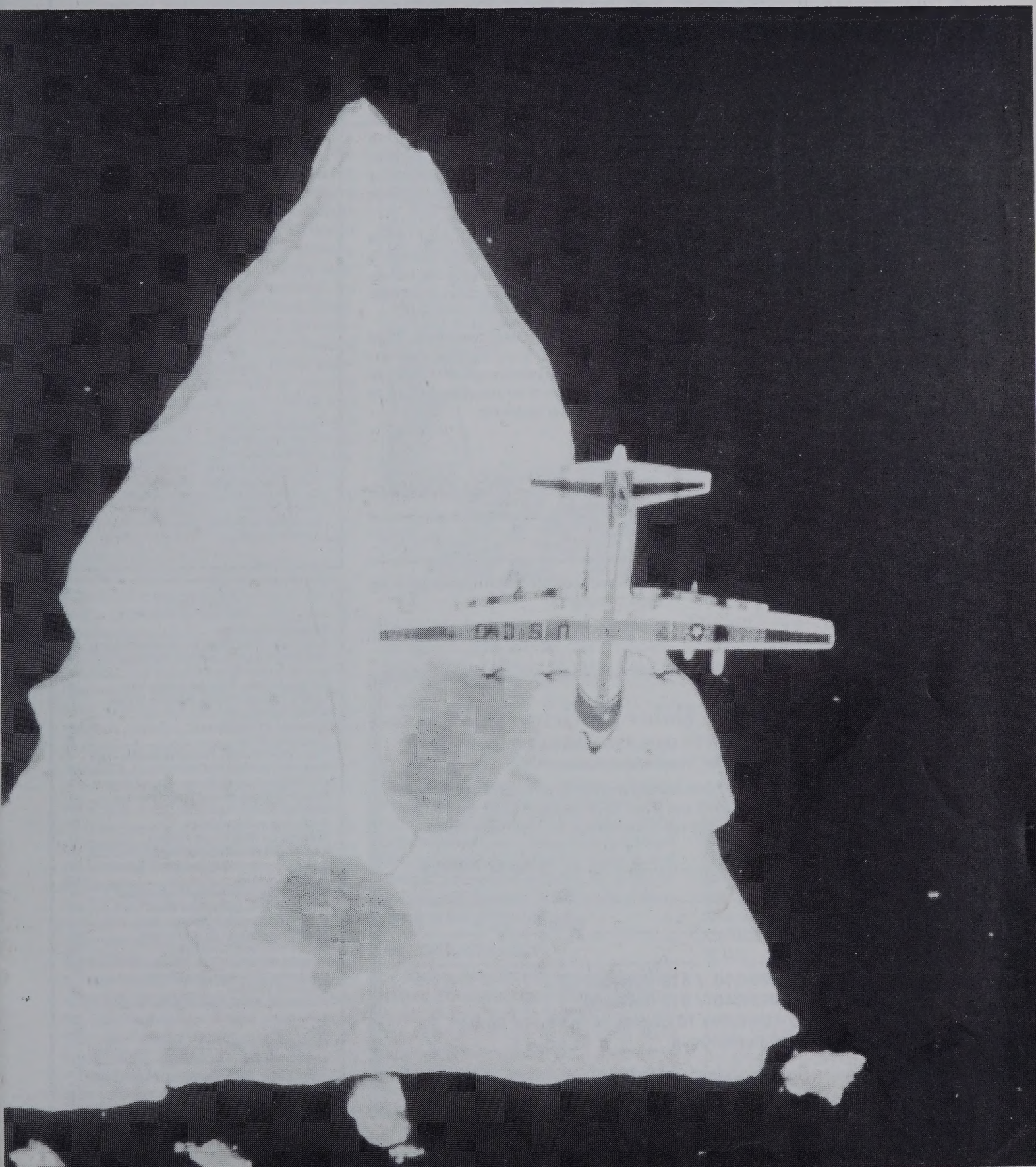
THE POLAR TIMES



Secretary's Letter

This issue of *The Polar Times* is especially pleasing to me; six of our members have taken up the plume and written articles. Collectively the membership of the American Polar Society know more about the polar regions than any other group. We should be doing more writing - we have many a tale to tell. Many thanks to all who have contributed and to those of you who faithfully clip articles from other periodicals.

We are dependent upon your financial support to keep the society alive. Annual contributions are due on January 1 each year; we insert dues envelopes in the Fall issue of *The Polar Times* for your convenience in this respect. We don't want to lose anyone because they have moved, or for incorrect addresses or for any other reason; if we have not received your dues by April 1st, we send out a first class letter to try to run you down - that way we recapture those who would otherwise have lost contact. This is an administrative headache for our *volunteer staff*, so help us out by getting your dues in on time and by sending us your address changes when you move.

I do need some help! **HELP!!** This job is more than full time in order to do it right and I need to split off some of the work. Right now I am Secretary, Treasurer, Membership Chairmen, Publisher of *The Polar Times*, Special Projects Chairman, Archivist and Librarian. (See Letters to the Editor article by David Lipton). We are about to take on the job of Oral Historian (See Article, *Oral History Project*, page). All of these jobs can be done better with dedicated volunteers for each one. Anyone interested in helping, please contact me directly.

Please note that we are on E-Mail : Mine is iceman@presys.com; Della's address is to come. Meanwhile, you are welcome to contact me directly with your articles or submissions.

Again, we appreciate the attaboys. That is all we are paid. Keep clipping those articles and, again, I encourage all with a tale to tell, an opinion or an anecdote to share, to take pen to paper and write.

Sincerely,

Brian Shoemaker

Editor's Letter

Our seventh issue! Time flies when you're doing something as enjoyable as working with all of you! Your letters and contributions have been wonderful. We wish we could publish them all! Keep them coming!

Della Weston

The Polar Times

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BRIAN SHOEMAKER, Secretary
P.O. Box 692, Reedsport, OR 97467

DELLA WESTON, Editor
ARTHUR DUMONT, Asst. Editor

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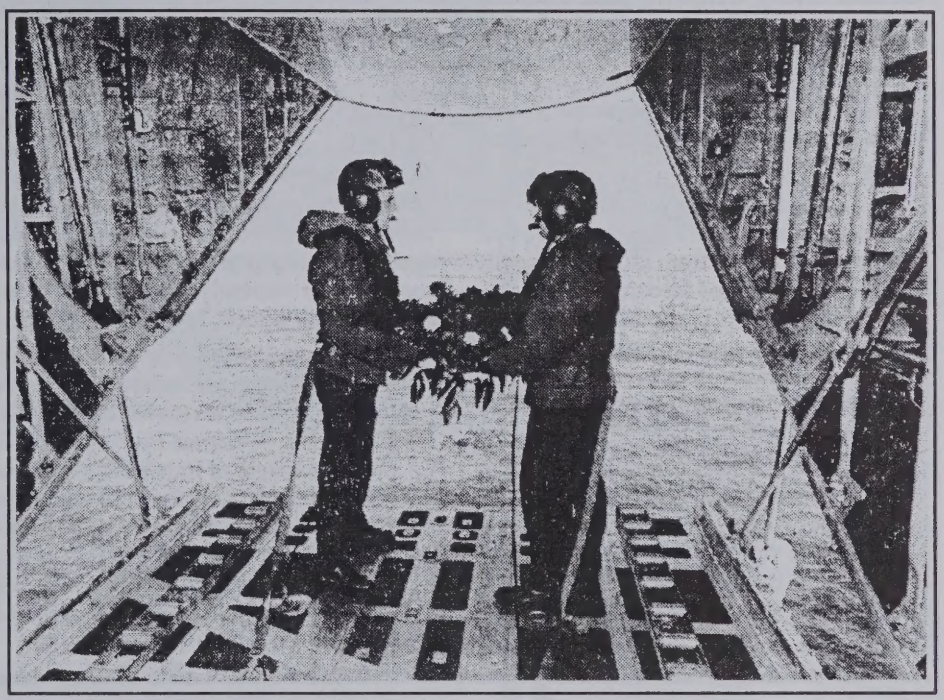
The Polar Times

American Polar Society • Spring-Summer 1996

Tracking Killer 'Bergs

By Donald L. Murphy, International Ice Patrol, Groton, Conn.—From March through July each year, U.S. Coast Guard aircraft, equipped with forward and side-looking radars, patrol the fog-shrouded and stormy north Atlantic ocean searching for icebergs. From its beginnings shortly after the sinking of *RMS Titanic*, the *International Ice Patrol*, which is part of the U.S. Coast Guard, has been responsible for guarding the southeastern, southern and southwestern limits of all known ice in the vicinity of the trans-Atlantic shipping lanes and for warning mariners of the location of icebergs that threaten safe navigation. The IIP service is managed by the United States government under the terms of the International Convention for the Safety of Life at Sea (SOLAS).



Most of the icebergs arriving in the vicinity of the Grand Banks originate from west Greenland's tidewater glaciers. By Antarctic and northern Baffin Bay standards, these are small icebergs; a million-ton iceberg is considered large, and a 10-million-ton iceberg is newsworthy. But their small size and advanced state of deterioration are the very characteristics that make them dangerous to mariners. Rarely is the visibility near the Grand Banks good, and in rough seas, small, low-lying icebergs are hard to detect with ship radar. A growler, the smallest iceberg size class, which might displace only a few thousand tons, is not very impressive, but it could inflict severe damage on any tanker or container ship unfortunate enough to strike it.

The Patrol's current operations are a far cry from the meager beginnings in 1913 when the Revenue Cutters *Miami* and *Seneca* first took turns patrolling the Grand Banks, searching for icebergs in the fog, maintaining direct radio contact with as many ships as possible, anchoring where possible and relaying their reports defining the ice danger zone to land "through any convenient steamer." Advances in technology have changed how the *International Ice Patrol* goes about its business. Modern communicators, new airborne radars, computerized numerical models and improved methods of measuring oceanic currents combine to make the operation more efficient while at the same time providing better, more reliable products to the trans-Atlantic mariner. The fundamental mission is, however, the same as that in 1913—to guard the limit of the regions of icebergs in the vicinity of the Grand Banks of Newfoundland.

The primary goal of the *International Ice Patrol* is to define the limits of all known ice as accurately as possible, neither underestimating nor overestimating the extent of the iceberg threat. To do this, IIP seeks iceberg reports from many sources and undertakes its own aerial reconnaissance. Data sources include commercial shipping, aerial reconnaissance by several Canadian government agencies and private industry.

RECONNAISSANCE

Early reconnaissance using ships provided, at best, a haphazard realization of the distribution of icebergs. When the IIP service was resumed after World War II, visual aerial reconnaissance replaced the surface operations. Thereafter, surface cutters were employed only in unusual circumstances. Unfortunately, conditions suitable for visual reconnaissance from aircraft are rare. During the iceberg season, the cloud ceiling on the northern Grand Banks is less than 1,000 feet, or visibility less than 2.5 nm roughly half the time. Thus, until 1983, an aircraft was stationed in Newfoundland for the entire iceberg season, to obtain sufficient aerial visual coverage.

In 1983, IIP began using the Side-Looking Airborne Radar (SLAR), an X-band, real aperture surveillance radar. Field studies show the SLAR is an effective iceberg (over 15 m) detector at typical IIP search altitudes (6,000 to 8,000 feet). The ability to detect growlers (under 15 m) seems to be strongly dependent on sea state. The larger the seas, the less likely that a growler will be seen by the SLAR.

In 1993, a second airborne radar was added to the reconnaissance aircraft to help discriminate between ships and icebergs in low visibility. The Forward-Looking Airborne Radar (FLAR) is a high-powered radar that combines long-range detection and target

CONTINUED ON PAGE 4

Europeans Make Room for Ice-Core Project

Science, **Vol. 270, 1 Dec 1995, p. 1434, by Jeffrey Mervis**—The U.S. Antarctic program isn't the only national effort coming under scrutiny from budget-conscious politicians. Both France and Italy, leading members of a 10-nation European effort to drill two 3,500-meter-deep ice cores on the Antarctic plateau to uncover 500,000 years of climatic history, are asking polar scientists to justify the additional expense for the $60 million project. At the same time, two other major partners, Britain and Germany, have reshuffled their Antarctic programs to make room for the new project in a tight budget.

The two-core European drilling project, known as the European program for ice Coring in Antarctica (EPICA), hopes to test whether the findings from Europe's recently completed Greenland Icecore Project apply on a global scale. Drilling will begin in December 1997, in a region influenced by the Pacific and Indian oceans, while the second phase will drill in an area affected by the South Atlantic Ocean.

In France, the debate is focused on plans for a $28 million year-round national station, Dome Concordia, at one of the two drilling sites. "Of course other scientists are interested in the money we will be spending at Dome C," says Roger Gendrin, director of the French Institute for Polar Research and Technology in Brest. "The criticism is based on people asking if it is really necessary to maintain a winter presence there and carry out continuous measurements at the site. We think the answer is yes."

When completed in 2000, Dome Concordia will host research in astrophysics, medicine, meteorology, seismology and other disciplines. It is likely to be only the second year-round station, after the U.S. South Pole station, operating on the Antarctic plateau. (Winter operations at the inland Russian station at Vostok were suspended after the 1993-94 austral summer, to save money, and the station, although it stayed open last year, is scheduled to close again at the end of the current summer season.) France currently operates one year-round coastal station, Dumont d'Urville.

In Italy, legislators are debating whether funds from Antarctic research would be better spent closer to home, on studies of the Mediterranean Sea. "Fortunately," says Mario Lucchelli, manager of Italy's National Program for Antarctic Research, "the program has lots of friends who know how important it is for Italy to be part of high-quality international research." Italy's only station, at Terra Nova Bay, is highly automated and is staffed only during the austral summer.

The EPICA project is already spurring some changes in Britain's and Germany's programs. Among other things, the British Antarctic Survey (BAS) is cutting two of its four year-round stations. Signy Station in the South Shetland Islands will close its winter operations next year, says BAS Director Peter Heywood, and in February, Ukraine will take over operations at Faraday Station, on the Antarctic Peninsula. (See *Britain Gives Away Faraday*, page 19). "We decided we wanted to put our money elsewhere, and we had to make some hard-nosed decisions," says Heywood.

Germany is also shifting resources to accommodate the drilling project in a tight budget. "We're trying to cut down on the number of winter-over people at Neumayer Station [Germany's sole year-round facility] by seeing how much of the work we can automate," says Max Tilzer, director of the Alfred Wegener Institute in Bremerhaven, which runs the country's Antarctic research program. The institute has shifted some money into Arctic programs to fund joint expeditions with Russia, and it is also in the process of dismantling a 10-year-old Atlantic station, Georg Forster, inherited from the former East Germany.

CONTINUED FROM PAGE 3

imaging capabilities into a single, integrated system. It can take advantage of the small-scale movement of ships to determine their outline and show prominent features of the superstructure, such as king posts, exhaust stacks, etc.

The advent of reliable and powerful airborne radars permitted IIP to undertake regularly scheduled reconnaissance, rather than waiting for clear conditions. IIP searches for icebergs using Coast Guard HC-130H long-range surveillance aircraft operating out of St. John's, Newfoundland, for five days every other week. It takes four patrols, each seven hours and 1,600 track-miles in length, to search a 120-nm swath along the entire limits of all known ice.

USE OF COMPUTER MODELS

All iceberg reports received at IIP's Operations Center in Groton, Conn., are entered into the Iceberg Data Management and Prediction System , a computer which combines an iceberg drift and deterioration model into a single, integrated, graphical system. IDMPS was developed originally by Canada's Atmospheric Environment Service, which monitors ice conditions in Canada's territorial waters. The *Patrol* maintains a very close working relationship with AES' Ice Centre in Ottawa, sharing iceberg reports and environmental data. IDMPS allows operators to keep track of more than 1,000 icebergs, make drift and deterioration estimates based on changing environmental conditions and plot the boundaries of the iceberg threat.

Environmental data for IDMPS are provided to *the International Ice patrol* by the U.S. Navy's Fleet Numerical Meteorology and Oceanography Center, located in Monterey, Calif. These data include marine winds, sea surface temperature and wave height and period. *The Patrol* maintains its own ocean current data base, which is based on the track of satellite-tracked drifters.

THE ICEBERG DANGER

In a typical season, about 500 icebergs move southward across 48 N latitude, the traditional boundary, south of which icebergs are considered to be a threat to trans-Atlantic shipping. However, there is remarkable variability in this number, ranging from none in 1966 to 2,202 in 1984. The 1990s seem to be a period of severe iceberg seasons. Thus far, the 1990s have been in the extremely severe and dangerous. In four of the last five years, the count far exceeded 1,000.

The Patrol informs mariners of the location of the limits of all known ice by transmitting a wide variety of information during the iceberg season. A daily facsimile chart is broadcast from U.S. Coast Guard Communications Station Boston. Twice daily, bulletins describing the limits of all known ice are also broadcast to mariners over the INMARSAT-C Safety NET and by high-frequency radio. Trans-Atlantic mariners must exercise extreme caution while passing through the dangerous waters of the western north Atlantic. *The International Ice Patrol* is on the job, however, and will continue to do its part to prevent loss of life or property due to encounters with icebergs by providing mariners with timely and accurate iceberg warnings.

***Editor's note*: A complete description of the ice limit broadcasts may be obtained from Commander, IIP, at 860-441-2630.**

Environmental Protection Agency Scales Back Forecast of South Polar Meltdown

Report paraphrased by Brian Shoemaker—The Environmental Protection Agency has recently lowered their long-range projections of sea level rise in a comprehensive report drafted by a panel of scientists on global warming, climate change and sea level rise.

"This report and other recent analyses suggest that sea level is likely to rise less than estimated by early reports on the subject. The lower estimates have resulted from both a downward revision of future temperatures and an emerging consensus that Antarctica will probably not contribute to sea level rise in the next 100 years."

"Recent reports have gradually lowered the projections of future warming, primarily for three reasons. First, in the mid-1980s the fully halogenated CFCs were perceived as potentially responsible for about one quarter of the expected warming. The CFCs are no longer considered likely to contribute significantly to global warming by the year 2100."

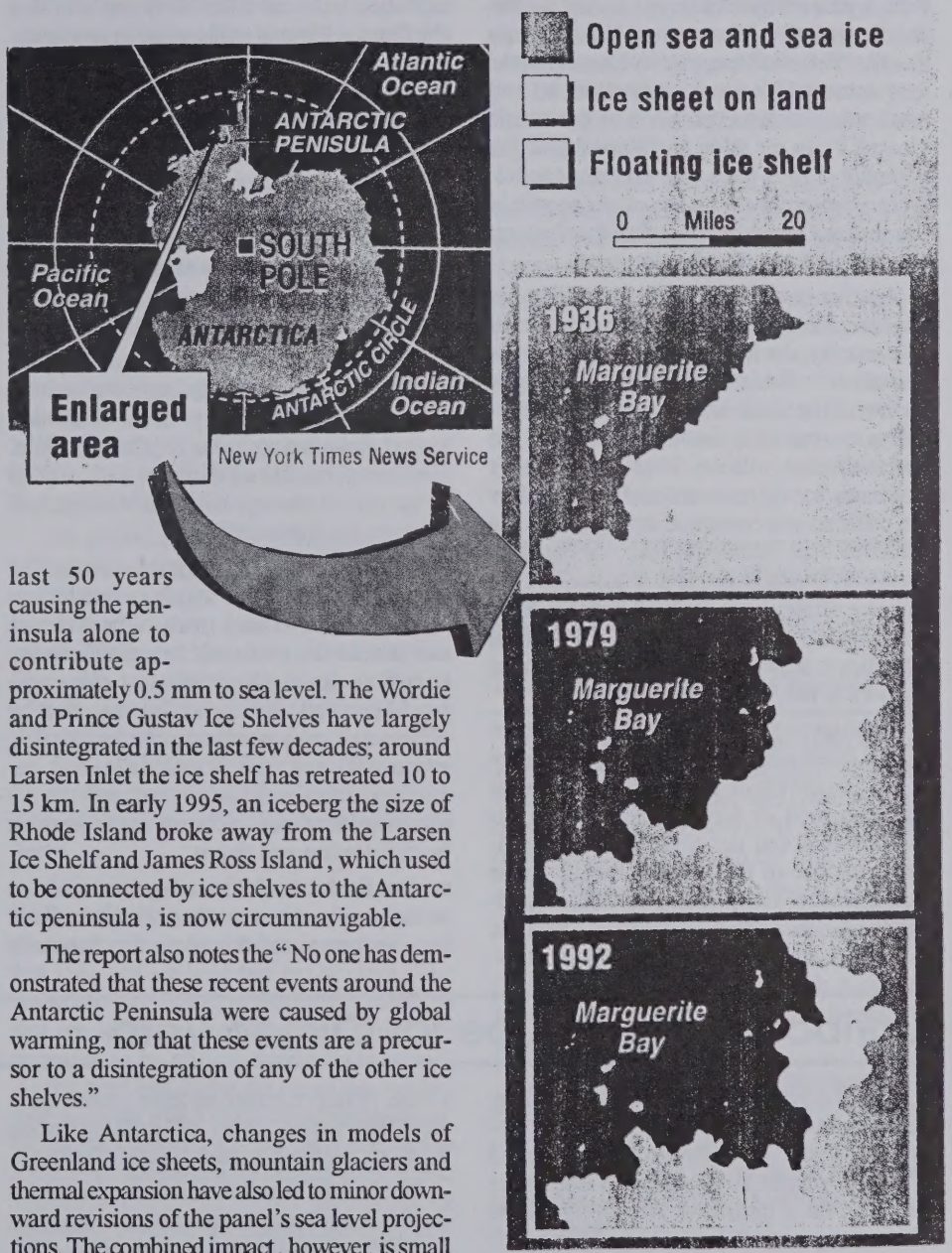
"Second, estimates of the concentrations of carbon dioxide have also been revised downward because of both lower emissions and revised carbon cycle models." Recent revisions in these models have also resulted in lower estimates of carbon dioxide concentrations and concluded that more carbon may be absorbed by the terrestrial biosphere than previously assumed.

"Finally, temperature projections have declined because the early studies did not consider the cooling effect of atmospheric sulfates and other aerosols resulting from human activities."

" The net effect of the various revisions is that the best-guess estimate for global warming by the year 2100 is about 2 degrees C - half the warming that was expected in the mid-1980s."

Changing projections of future temperatures is not the only reason that sea level projections have been revised; estimates of the likely contribution from Antarctica have also been revised downward. Recent assessments have generally concluded that the initial contribution to sea level rise will probably be negative. Since 1990, "most studies have suggested that the [Antarctic] ice sheet's response [to warmer temperatures] may be small and thus more than offset by increased precipitation, at least for the next century."

The report did point out that the Antarctic Peninsula has warmed 2 degrees C in the last 50 years causing the peninsula alone to contribute approximately 0.5 mm to sea level. The Wordie and Prince Gustav Ice Shelves have largely disintegrated in the last few decades; around Larsen Inlet the ice shelf has retreated 10 to 15 km. In early 1995, an iceberg the size of Rhode Island broke away from the Larsen Ice Shelf and James Ross Island, which used to be connected by ice shelves to the Antarctic peninsula, is now circumnavigable.



The report also notes the " No one has demonstrated that these recent events around the Antarctic Peninsula were caused by global warming, nor that these events are a precursor to a disintegration of any of the other ice shelves."

Like Antarctica, changes in models of Greenland ice sheets, mountain glaciers and thermal expansion have also led to minor downward revisions of the panel's sea level projections. The combined impact, however, is small compared with the uncertainty regarding Antarctica and global temperature change.

The panel also qualified their assessment, stating *"The processes that determine warming of the circumpolar ocean, the melting of the ice shelves, and the speed at which glaciers flow are very poorly understood."*

The report, *The Probability of Sea Level Rise,* was published in September 1995 by the EPA Office of Policy, Planning and Evaluation. Panel coordinators were James G. Titus and Vijay K. Narayanan.

Mega Berg

***The Fairfax (Va.) Journal*, "Earthweek," 3 Nov 1995, p. A2 (contributed by Peter Barretta)**—A chunk of ice measuring 82 square miles has broken loose from Antarctica due to warming waters. The block, named A032, separated from the Larsen Ice Shelf and floated 300 miles to the northeast in the Drake Passage between Antarctic and Argentina. Movement of the stray block is being monitored via satellite by the Antarctic weather center.

Lies About Drilling for Oil

The Washington Times, **20 Dec 1995, p. A23, by Lon Sonsalla (contributed by Peter Barretta)**—As mayor of Kaktovik, an Inupiat "Eskimo" community literally at the very center of the controversy about oil and gas leasing in those portions of the Arctic Coastal Plain set aside for their oil and gas potential, I have the honor and responsibility to represent the interests of our people in this matter. Our interests are abundantly clear: Our people favor this development.

For thousands of years, the Kaktovikmiut have lived in the Coastal Plain and protected this country. As a people, we remain committed with a fierce determination to the protection of the lands and waters and biological resources that form the heart of the Kaktovikmiut culture. That commitment continues today, renewed and enhanced by the political and economic strength we have achieved from intelligent resource management and strong political activism. We control our affairs here through vibrant local government, and we manage all commercial activities to benefit our people and to protect our way of life, both now and forever.

Contrary to the massive distortions about us, our lands and the proposed development of the Coastal Plain, the issue here is not an environmental or ecological one. This development would not conflict with a legitimate purpose of the wildlife refuge: game management. The primary conflict regarding the Coastal Plain is with the romantic images of a few powerful urban recreationists and their political allies. It is not true that the Coastal Plain is wilderness, in any sense. It simply would not qualify by any standard. Yet, even the president of the United States has called it the last great wilderness in Alaska, which is patently absurd.

Should oil and gas leasing proceed and should it lead to commercial development in this small portion of the refuge already set aside by Congress under the Alaska National Interest Conservation Act as an oil reserve, there will be no damage to this ecosystem from it.

Through our borough government, we have more than 20 years or experience in managing oil and gas activity on the Coastal Plain. We have permitted no damage, and we shall never permit damage within this refuge and these native homelands.

What then is the issue? It seems to us that it is purely and simply a grab to control our land—another broken treaty—for it denies our people the economic benefits from responsible development of what elsewhere would be alled tribal lands. It is an effort by elitists and propaganda machines to vilify us, to vilify our friends and supporters, including virtually all Alaskans, and to take the benefits of our ancestral lands from us by obfuscation and deceit.

Our lands should be recognized as those of the people, our ancestors, who have lived here and protected this place for thousands of years and who deserve full credit for whatever merit anyone finds here. These are not the lands of a few urban people who think it "uninhabited." Our lands should not be treated as a playground for those few with the money to raft these rivers in our brief summer weeks and frighten and harass our caribou with their film crews and airplanes, and insult us with their silly behavior.

The most appalling lies are those told to the Gwich'in, in two tiny villages far to the south of us, in the Yukon River drainage. Lies which have been fostered among the Gwich'in have driven some of their people to fear the loss of the caribou on which we all depend. And then those who told the lies use these people and their baseless fears against us.

If there were even the most remote possibility of harm from activity on the Coastal Plain, our people would oppose it, as we oppose the truly dangerous drilling directly offshore of the refuge, drilling promoted by this very same president who claims to be a protector of the environment and who refuses even to speak with us about any of it.

Politics being what it is and lies working as they do, we are in danger of being denied the benefits of our ancestral lands. But to those who know the truth, the Coastal Plain should be open to environmentally sensitive oil and gas development. Please listen to the truth. (See companion article, *Caribou Hunters*, below.)

Caribou Hunters Hope for Clinton Veto

The Washington Times, **26 Nov 1995, p. A10, by Paul Koring, OTTAWA (contributed by Peter Barretta)**—A few hundred Gwich'in people in the northern Yukon are counting on a promised veto by President Clinton to protect the calving grounds of the huge Porcupine caribou herd from oil and gas development and prevent perhaps the greatest threat in 20,000 years to the Gwich'in way of life.

"It would kill our caribou...and the people will starve, and there will be nothing left in Old Crow," Edith Josie, a 73-year-old Gwich'in from Old Crow said last week after returning from a 10-city lobbying tour in the United States.

The Indians say their traditional way of life is at stake, along with the survival of one of the few remaining migratory herds of barren-ground caribou. Both the U.S. Senate and House of Representatives have passed measure that would allow oil drilling inside Alaska's Arctic National Wildlife Refuge.

Backed by Alaskan senators, the oil industry, some Inuit groups and deficit cutters in Washington, the proposal to allow drilling in the supposedly protected reserve has drawn opposition from the Canadian government as well as Gwich'in people on both sides of the Alaska-Yukon border.

Ms. Josie, who was made a member of the Order of Canada in recognition of her column "Here Are the News," which has been famous in the Arctic for decades, said disruption of the Porcupine herd would be ruinous for Old Crow and a handful of other Gwich'in villages in Yukon and Alaska.

Old Crow, 155 miles north of the Arctic Circle, is one of the few remaining Indian settlements in North America still largely dependent on traditional hunting patterns. Every spring and autumn, Old Crow hunters kill hundreds of caribou from the 150,000-strong Porcupine herd, the main source of meat for the settlement's 200 people.

"Everyone, they don't like development to go through," Ms. Josie, said. "You know it will spoil the land, and the caribou will die off."

Last month, Mr. Clinton vowed to veto "any budget reconciliation bill that includes opening the [refuge] to drilling."

In a letter lending support to senators engaged in a losing effort to amend the bill, Mr. Clinton said Congress is faced with a "clear choice between protecting a unique, biologically rich wilderness and pursuing a misguided energy policy." (See companion article, *Lies, above.*)

Cutting Through the Frozen Antarctic

Kevin Schafer

From a rolling Russian ship, Watching the White Continent turn pink...

***Excerpted from The New York Times*, 7 Jan 1996, p. 8, by John Freeman Gill (contributed by Martin Pomerantz)**—After all I had heard about Antarctica's windblown hostility, it was a pleasure to find that in January the icecap can be more blush than bluster. The summer sun, which takes increasingly shorter naps the farther south you sail, often washes the ice-scape with a surprising, peach-sherbet light. And when the coast's ruddiness is reflected in a glassy bay, the resulting play of pastel blues and pinks, punctuated with jagged scraps of floating ice, looks like something out of a Monet.

Gaining this view is not easy, for traveling to Antarctica's Ross Sea, which my father and I undertook last January on a Russian-owned icebreaker, can feel a bit like going to the moon. The journey—seven days each direction through the nauseating swells of the Southern Ocean—is as arduous as the polar terrain is alien.

Life at sea was looking awfully cushy—until we emerged the first evening from Tasmania into the Southern Ocean, where all hell broke loose. The *Khlebnikov* is a top-heavy behemoth designed for the flat waters of the Arctic. Moving about feels like balancing on the tip of a great metronome, and the clatter of breaking dishes from the kitchen (broken arms among the passengers would follow, ably set by the ship's American doctor) provided our first clue why Quark Expeditions billed this trip as a voyage and not a cruise. Before the night was out, we discovered that any object placed on the desk in our Spartan beige cabin became a projectile almost instantly.

Over the next three days we weathered storms that included a force 10 gale and 55-knot gusts, tons of water crashing over the *Khlebnikov*'s bow. Staying put was advisable, and my favorite place to do that was in the library, a small, pleasant lounge with a broad selection of Antarctic titles.

The sea calmed as the *Khlebnikov* crossed the Antarctic Circle (66 degrees 33 minutes south). The previous evening, as the sky turned from silver to purple to black, we had spotted our first iceberg, a boomerang-shaped, half-mile-long beauty that had likely calved off the Ross Ice Shelf and floated northwest several hundred miles.

The following morning I stepped onto the bridge and was greeted by the shimmering spectacle of eight colossal bergs, dead ahead, hovering in the distance like some otherworldly gateway. As we drew within a few miles, another equally awesome flotilla appeared just behind the first, immense blocks resembling cliff-faced islands. Gleaming in the sun with beauty and menace, these were mostly flat-topped bluffs that had calved with a roar off the Astrolabe Glacier and floated north.

Before long the ship approached a region where no surface water remained unfrozen. Our icebreaker plowed into a vast plain of fast ice—sea ice held fast to the coast. The shore was not visible, however, and since the fast ice looked as solid as terra firma, we appeared to be gliding magically overland. As the steel hull broke the ice with a rumble that sounded like a giant chewing boulders, we entered a world unlike any I had imagined. In all directions, as far as the eye could see, stretched a rose-tinged moonscape of unbroken, brackish ice, dotted with bergs held motionless by the frozen ocean.

By the time the *Khlebnikov* parked in the fast ice of McMurdo Sound, the farthest south a ship can penetrate, our landings were coming fast and furious. In one extraordinary day, we flew by helicopter (the *Khlebnikov* carries two) to American and New Zealand bases on Ross island; flew into the Dry Valleys, a cold, ice-free desert where no rain has fallen in two million year, and entered the huts of expeditions led by Scott and Shackleton early this century.

Later as we stood on the sea ice, out shot an orca, punching through the Antarctic stillness, his handsome head blowing spray in a mighty exhalation. With a grace that seemed slow motion, he rose six feet, appeared to stop midair, then slipped back down. He repeated this balletic motion four times, now flaunting his dorsal fin, now rolling to show off his jet black tail.

So transfixed was I that I failed to notice, until someone nudged me, that the orca had chosen as a backdrop the tallest mountain in Antarctica, Mount Erebus. My fingers were numb beneath two pairs of gloves, and my earlobes were stinging, but not for the world would I have missed the finale. As the late-night sun painted a frozen sea, wonder layering upon wonder, the killer whale surged 10 feet out of the water and rotated slowly to face us, his black-and-white head silhouetted against the Pink Continent.

African stowaways learn too late ship headed for Antarctic

***Columbia Dispatch*, 24 Nov 1995, OSLO, Norway**—Two Africans stowed away on a Norwegian freighter in Cape Town in hopes of reaching Europe, only to learn the bitterly cold truth three days into the trip.

The ship was bound for the Antarctic.

The two men, who were not identified, sneaked aboard the Norwegian ship *Polar Queen* when it stopped in South Africa en route to the Antarctic with a 46-member German-Italian expedition.

The stowaways hid under the engine room deck, emerging hungry and seasick after three days.

The stowaways are stuck on the frozen continent until the *Polar Queen* sails in about two weeks.

Medals Wanted

Glen Stein is compiling a book on *Medals for Polar Exploration* and

invites all interested parties to contribute information (i.e.: The Challenger Medal - awarded to those who cruised aboard HMS Challenger). Please contact:

Glen M. Stein, 1268 Foxforrest Circle, Apopka, FL 32712-2335.

Ph (407) 884-4148.

All correspondence acknowledged.

Antarctica May Offer Clues on Whether Life Ever Existed on Mars

America Online, 15 Nov 1995, by Malcom W. Browne of *The New York Times*, LAKE HOARE, Antarctica—It has been nearly 19 years since two Viking spacecraft analyzed Martian soil and failed to find any evidence of past or present life. But some biologists believe that at least fossil remnants of extinct life may yet be found on the red planet, and that Antarctica offers clues to where future Mars explorers should look.

Almost since the time of the two Viking missions in 1976, planetary scientists have focused attention on the region of Antarctica known as the dry valleys—a network of glacial gorges and valleys transecting the Royal Society mountain range and leading to the west coast of the Ross Sea. As a result of high winds that sweep away the snow and the mountain range that obstructs the downward flow of ice from the polar plateau, the valleys are almost bare of snow and ice.

Dr. E. Imre Friedmann of Florida State University has spent 13 Antarctic summers studying the hardy but elusive organisms inhabiting the dry valleys. Now 73, he completed his latest arduous research season in the dry valleys in January. He believes that more discoveries await scientists in the region.

It could be, some scientists believe, that life at a similarly primitive level once existed on Mars—if, as they believe, Mars once had lakes.

"...it is during this period when life could have arisen."

Liquid water is not known to exist anywhere on present-day Mars. But between four billion and two billion years ago, Mars may have had lakes very much like Antarctica's Lake Hoare, Lake Vanda, Lake Bonney and Lake Fryxell [as well as] several other small ones, in the view of Dr. Robert A. Wharton Jr., of the Desert Research Institute in Reno, Nev.

During Mars's early history, the planet may have had a much denser atmosphere than it does now, it climate may have been warmer, and liquid water was probably prevalent, especially in the form of outflow channels discharging water from underground aquifers. Photographs of Mars show many valleys similar in appearance to terrestrial river valleys, with tributaries, meanders, deltas and other river features common on Earth. "From a biological perspective," Dr. Wharton said, "it is during this period when life could have arisen."

A system of Martian canyons some 1,500 miles long, named Valles Marineris, may be a particularly good place to look for the fossil remnants of primitive life, Dr. Wharton and other scientists believe. There are features in the region that look very much like the layered deposits of silt that form in lakes like those in Antarctica, and these may actually be the remains of "paleolakes" where Martian microorganisms or other simple life forms could once have lived.

Smuggled CFCs Continue to Destroy Polar Ozone

The CFC gas comes from India, where it is legal, to the U.S., where it is banned.

(excerpted from an article by Charles Hanley, Associated Press, NEW DELHI, India)—Smuggled CFC gas from India has been seeping into the United States by the ton, allowing American motorists to stay cool for less this summer, but prolonging the deterioration of ozone in the polar regions.

The U.S. Customs Service says the contraband chlorofluorocarbon-12, the air-conditioning gas commonly called Freon, has suddenly become its No. 2 problem, behind illegal drugs.

Here in India, where CFC-12 production is still legal, a company identified as a source of black-market gas, denied any knowledge of it.

One scheme broken up in Florida—with an Indian connection—involved CFC-12 worth $52 million. The U.S. government, meanwhile, has lost possibly hundreds of millions in tax revenues because of coolant smuggling.

A 1987 treaty, the Montreal Protocol, phases out CFCs because of evidence that the compounds damage the upper atmosphere's ozone layer, which shields Earth from most of the sun's ultraviolet radiation and prevents skin cancer and other illnesses.

Since Jan. 1, CFC imports and production for domestic use have been banned in the United States. They were banned in western Europe a year earlier.

In recent years, to encourage conversion to equipment using the new chemicals, the U.S. government imposed huge taxes and import duties on CFCs, more than tripling the price of a 30-pound cylinder to about $250. Domestic production, meanwhile, was sharply reduced.

Consumers seldom know whether they're getting legal or illegal coolant, but experts say one-third or more of CFC-12 in U.S. commerce may be smuggled.

At Navin Fluorine Industries in New Delhi, a Mafatlal subsidiary that produces CFC-12, spokesman Sunil Jandon said the company knew nothing of such smuggling.

European producers say the market in new substitute chemicals has grown only half as fast as projected, apparently because availability of smuggled gas is delaying conversions.

Environmentalists say the ozone hole over Antarctica, at best, won't recover its previous density until the mid-21st century, and the smuggling and Third World sales threaten to set even that goal back. They want a global ban on all CFC production and trade.

Arctic road put on ice

World Wildlife Fund Focus, **Sept-Oct 1995 (contributed by Nathan Frank)**—

AWWF campaign has temporarily stopped a proposal by Norwegian coal mining company Store Norske Spitsbergen Kulkompani (SNSK) to build a road through Svalbard, an Arctic wilderness area on the island of Spitsbergen.

In late February, WWF-Norway, WWF International's Arctic Program, the Norwegian Tourist Association, the Norwegian Society for the Conservation of Nature and the Norwegian Ornithological Society ran a "Svalbard: No Road Through the Wilderness" campaign, asking people to send cards to Prime Minister Gro Harlem Brundtland. Almost 1,500 people responded, and WWF-Norway secretary general Vera Selnes sent a personal letter. Finally, in May, Brundtland's office announced that the road proposal would not be put on the government agenda for several years.

Fears Over Russia's Decaying Nuclear Subs

Makeshift dump for spent fuel is recipe for disaster

***San Francisco Chronicle*, 14 Feb 1996, by Charles Hecker, MOSCOW (contributed by Brian Shoemaker)**—Russia's Northern Fleet of nuclear submarines sits in the frigid arctic waters of Murmansk, at the top of the Kola Peninsula, slowly rusting to bits. Spent nuclear fuel removed from those subs is stored in nearby Andreyev Bay in a makeshift, dilapidated dump designed for temporary storage of far smaller quantities.

Environmentalists and nuclear experts say the conditions at the two sites create the potential for a lethal disaster, one that Russia is hardly equipped to handle.

Listen to *Red Star*, the Russian military's official newspaper, a publication not usually given to criticizing its owner. "The North literally is standing on the edge of an ecological disaster," correspondent Dmitry Litovkin wrote in a recent report.

Norway, Russia's neighbor along the peninsula at the top of the world, is extremely concerned about what amounts to a dormant Chernobyl off its arctic coast. And a Norwegian environmental group called the Bellona Foundation, which receives financial support from the government, is not letting the issue alone.

In November, Bellona raised an unprecedented stink over the hazard presented by the Russian subs by releasing a report in a widely publicized press conference in Moscow. For its efforts, the group has been threatened and intimidated by the Russian police.

"We have radioactivity at this location [comparable to] 5,000 French nuclear tests of the first type or 1,000 times more radiation than the biggest," said Frederic Hague, Bellona's director.

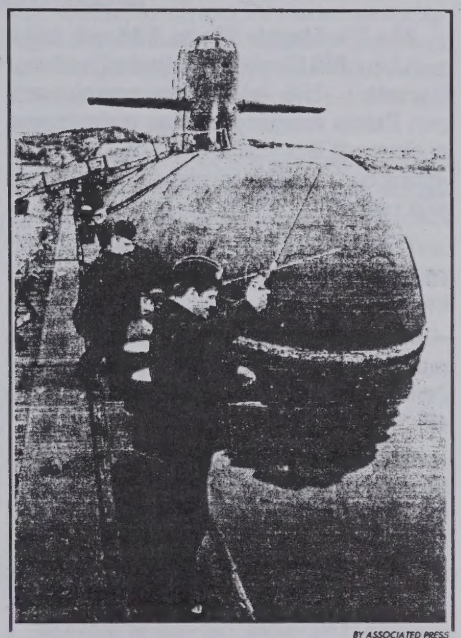
Bellona's Russian branch headquarters were raided by the Federal Security Service, or FSB by its Russian initials. FSB officials confiscated computers, video cameras and all material on the Northern Fleet's nuclear waste sites from Bellona's office in Murmansk, the largest city on the peninsula.

Some 20 members working with Bellona have since been interrogated by the FSB, and many of their houses have been searched. One of them, retired Russian navy Captain Alexander Nikitin, was arrested Feb. 6 and charged with treason because of his work in collecting information on the problem.

The Kola Peninsula is the same place where, in September, the local utility company shut off electricity to the Northern Fleet's base because the Defense Ministry was late in paying its electric bills. Four decommissioned submarines were left without power for nearly an hour.

One of the submarine's built-in generators failed as a result, cutting off the cooling system and causing the reactor to overheat, according to an Itar-Tass report of the incident. Naval officials denied that the reactor overheated.

Two days later, Prime Minister Viktor Chernomyrdin signed a decree forbidding power companies from cutting power to military facilities, but the incident proved just how fragile is the balance between safety and disaster at the Northern Fleet.



BY ASSOCIATED PRESS

Sailors from Russia's northern fleet fished next to the nuclear submarine Andromeda, which has been taken out of active duty

Submarines that have been out of commission for more than three years no longer need a cooling system. Submarines more recently decommissioned crucially need cooling systems. Overheating would render the reactor's power rods too dangerous to remove, he said, and radiation could escape through the submarine's shell into the Arctic Ocean.

Antarctic Trip Kept Man on Ice as Global War Began

***The Columbus Dispatch* (with permission), 14 April 1996, p. 5B, by David Lore**—Charles Passel drew No. 7 in the World War II draft, but armies were on the move by the time the young Indiana geologist reported to his draft board in late 1941.

"The said, 'Passel, where the hell have you been?'" he recalled. "'Antarctica, sir,' I replied."

From 1939 to 1941, as millions marched to war, Passel explored a more peaceful world as a member of the U.S. Antarctic Service Expedition.

Instead of tanks and bombs, Passel worried about Adm. Richard E. Byrd's crippled snow cruiser, sled dogs tumbling into crevasses and fire in the "blubber house."

Passel, now 81, recalls being only dimly aware of what was happening back home. "We worked 12 hours a day, and at night I'd write in my diary," he explained.

That diary, published last year by the Texas Tech University Press as *Ice: The Antarctic Diary of Charles F. Passel*, had been forgotten for more than 40 years. It's the day-by-day travails of a 25-year-old graduate student from the University of Miami (Ohio), swept up in what he calls "the last of the great romantic expeditions."

The independent oil geologist from Abilene, Texas, was in Columbus last week for a conference on Antarctica at Ohio State University's byrd Polar Research Center.

The 1939 expedition—Byrd's third to Antarctica—was a hybrid affair with the admiral in command but the Roosevelt administration an interested sponsor.

On the ice, of course, nothing proceeded according to plan, Passel said. Byrd's bus-sized snow cruiser broke through a ramp of telephone poles upon debarkation at the Bay of Whales, nearly winding up in the soup.

The plan was to drive the cruiser—with a reconnaissance plane strapped on top—all the way to the South Pole. But the bulky, underpowered vehicle broke down almost immediately and wound up being housed at Little America, on the coast, Passel said.

Tractors and dog sleds disappeared into crevasses, and a near-disaster occurred when stored blubber—food for the dogs—caught fire. Still, there were no fatalities, and most of the expedition's objectives were met, he said.

Next month marks the 70th anniversary of Byrd's first flight over the North Pole in 1926. The explorer subsequently led five expeditions to Antarctica, the last in 1955.

Passel finally got into uniform, serving with the Marines in the Pacific during World War II. After the war, he became a petroleum geologist but never returned to the ice.

He had never gone to Antarctica planning to write a diary, he said. "It's just something I started doing when I couldn't sleep," he explained.

U.S. Officials Suspect Russia Staged Nuclear Tests This Year

Blast would violate moratorium imposed in '92

***The Washington Times*, 7 March 1996, p. A3, by Bill Gertz (contributed by Peter Barretta)**—U.S. intelligence agencies suspect Russia secretly set off an underground nuclear test this year and broke a four-year testing ban, Clinton administration officials said yesterday.

"There was some activity you might expect to see that is associated with a nuclear test," said one U.S. official.

However, the data on the incident at the remote arctic test facility on the Novaya Zemlya archipelago was "inconclusive," the official said.

A second official said many Pentagon officials have few doubts and believe Moscow set off a small nuclear weapon in its first underground test since a moratorium was imposed in 1992. "There's no question it was a nuclear test," this official said. "The only question is the yield," or size of the blast.

"[It is] vital to constrain both the spread and further development of nuclear weapons."—PRESIDENT CLINTON

"It was a low-yield test in mid-January," the second official said, noting that intelligence reports stated that the test took place on the northern island of the two-island chain in what the Russians now call the Central Test site.

The facility was closed following the collapse of the Soviet Union in 1991, but reopened by Russian President Boris Yeltsin in 1992 in anticipation that Russia might resume nuclear testing. More than 130 nuclear tests were conducted at the site between 1954 and 1989.

Russian Embassy spokesman Vladimir Derbeney said the embassy "has no information on this." He said a nuclear test is "highly unlikely."

State Department spokesman David Leavy declined to comment on reports of the test, citing a policy of not discussing intelligence matters. However, he told *The Washington Times* that "it is the view of the United States that the Russian moratorium on nuclear testing is continuing."

Other U.S. officials said intelligence agencies are continuing to investigate the issue to try to determine if the Russians broke their moratorium on testing, imposed in 1992.

"This is the kind of issue the intelligence community will continue to look at," one official said.

The test, if confirmed, could undermine administration efforts to conclude an international agreement banning all test, said officials who spoke on condition of anonymity.

President Clinton said in his state of the Union speech in January that concluding an international agreement on nuclear testing this year is one of his "seven challenges" for the future.

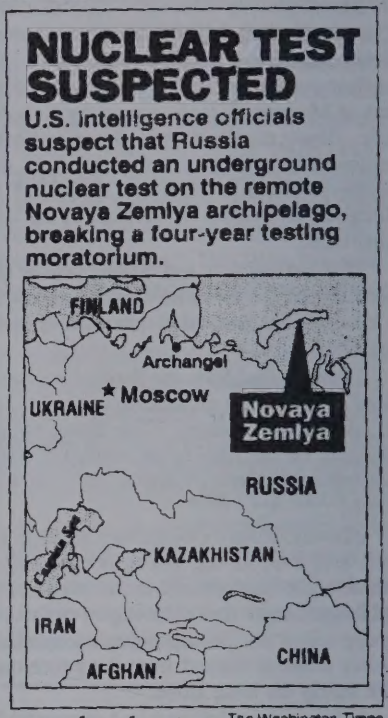
The administration hopes the U.N. General Assembly will approve a final comprehensive test ban treaty by June. The pact is currently being negotiated at the 38-member Conference on Disarmament in Geneva. If approved, the treaty would bar all nuclear testing by signatories.

Mr. Clinton has called implementation of the treaty "vital to constrain both the spread and further development of nuclear weapons."

Efforts to conclude a test ban treaty have been made more difficult by France's recent series of six nuclear tests and several Chinese underground nuclear blasts.

India is said by U.S. officials to be preparing for its first nuclear test since 1974, and Pakistani officials have said their government would consider testing its unassembled nuclear arms in response to any Indian test.

Nuclear arms experts say the U.S. intelligence community closely observes nuclear testing facilities around the world through its space-based spy satellites and a system of sensors that can detect the seismic waves from underground nuclear tests.



Test preparations normally include drilling a large hole, where the bomb is placed, and laying cables that are used to monitor the explosion.

Gregory van der Vink, a seismographic expert with Incorporated Research Institutions of Seismology in Rosslyn, said seismologists in Europe are looking for evidence of a Russian nuclear test in Novaya Zemlya but so far have not detected any underground blasts.

Mr. Yeltsin has told Mr. Clinton that he will support a comprehensive test ban treaty that bans nuclear tests of even the lowest yields, a senior State Department official said.

Polar explorer among women Hall-of-Famers

***Pensacola News Journal*, 15 Oct 1995, p. 11A, SENECA FALLS, N.Y. (contributed by Billy-Ace Baker)**—Few of the women Ann Bancroft meets each year during her lecture tours share the polar explorer's passion for a wilderness of brutal, cold, unrelieved whiteness.

That's not to say her achievement in becoming the first woman to trek to the North Pole, as part of a mostly male expedition in 1986, and then to the South Pole in 1993, alongside three other women, are lost on them.

"Most of the people I talk to would never want to get cold, to feel what I felt," she said, laughing. "But they do understand struggle, they do understand hardship, what it takes to have that collective strength to overcome the barriers that exist" for women everywhere.

Bancroft was one of 18 women, including Ella Fitzgerald and Supreme Court Justice Sandra Day O'Connor, who were inducted Saturday into the National Women's Hall of Fame.

Antarctic Tourist Flights

Polar Record, **July 1995, Vol. 31, p. 347, compiled by R.K. Headland, Scott Polar Research Institute, University of Cmbridge; and P.L. Keage, Tourism Victoria, 55 Swanston Street, Melbourne, Victoria 3000, Australia (contributed by Peter Barretta)**—*Received March 1995:* During the 1994-95 austral summer, day tourist flights over Antarctica were resumed, with a series of six originating from Melbourne and Sydney.

With the exception of the period from 1977 to 1980, the vast majority of tourists visiting Antarctica have traveled aboard ships, with small numbers coming via flights with a private company, Adventure Network International, or with Fuerza Aérea de Chile. Day flights began on 13 February 1977 and lasted four austral summers, until 16 February 1980, when they ended in the aftermath of the crash of an Air New Zealand DC-10 aircraft into Mount Erebus, killing all 257 aboard on 28 November 1979. During this period, there were 40 flights (28 Qantas and 12 Air New Zealand), from which approximately 10,000 tourists saw Antarctica.

On New Year's Eve 1994, Croydon Travel Centre in Melbourne began a series of six chartered Qantas flights aboard B747-300 aircraft, which also departed on 7, 21 and 26 January and 11 and 18 February 1995. The operations, which were closely regulated, involved some Qantas staff with experience on the earlier flights. The proposal for Antarctic flights was considered on technical and safety grounds by the Australian Department of Civil Aviation. Additionally, Qantas prepared an environmental review in accordance with the Antarctic Treaty. This review was considered and endorsed by the Australian Antarctic Division, from where an observer accompanied each flight by invitation.

Although the aircraft had seating capacities of 386, each carried 299 paying tourists. In total, some 2,100 persons saw Antarctica during the 1994-95 flight programme. Viewing opportunities were enhanced by using the three seats next to the portholes and one central section aisle seat only; approximately halfway through the flight, a seat change was made to move those most distant next to the Portholes. Each aircraft was specially equipped with a closed circuit television system; a camera in the cockpit transmitted pictures to passenger television screens. This was supplemented by information broadcast through the public address system. These arrangements improved viewing opportunities and allowed lecturers to draw passengers' attention to specific features. There was also limited access to the flight deck.

Each flight lasted more than 12 hours, of which up to four were over Antarctica. The southward journey was used to provide detailed safety information (special survival suits were carried as well as the usual safety equipment), to introduce specific Antarctic topics and to show selected documentary films. Two expert lecturers were aboard, and passengers were encouraged to submit questions, which were answered over the public address system. The actual route selected for each flight was determined immediately before departure, from satellite data and forecasts from the Bureau of Meteorology, and, while operating, meteorological information was freely exchanged with the United States coordinating centre at McMurdo station, and with other stations for local conditions.

The demand for both ecotourism experience and for access to Antarctic is currently increasing.

The aircraft flew over the coast between Terre Adélie and the Ross Sea. Passengers saw Dumont d'Urville (with its new runway), Leningradskaya and Baia Terra Nova stations; Cape Adare and Commonwealth Bay historic sites; Mount Minto and other peaks of the Trans-Antarctic Mountains; Macquarie Island, the Balleny Islands, the Possession Islands and Coulman Island; and the site of the South Magnetic Pole. Due to poor weather, flights over Wilkes land and Casey Station were not practicable. About 2000 km of coast were seen during each flight. The region overflown is particularly suited for viewing from the air, as pack ice frequently makes close approach by sea difficult. While over Antarctica, aircraft flew comparatively slowly and did not descend below 3000 meters.

The 1994-95 flights were mostly booked shortly after their announcement in Australia (2 November 1994) and at the international launch at the World Travel Market in London (mid-November). This form of tourism permits large numbers of persons to see Antarctica in safety and comfort. The demand for both ecotourism experience and for access to Antarctic is currently increasing, and these flights provide almost the only opportunity for a one-day visit. Tourists from Japan, Korea (Seoul) and Taiwan are an emerging market for the flights. Special programmes, including interpreters familiar with Antarctic matters, are to be developed for these and several other specific groups.

Antarctic tourism is well established and has been increasing steadily during the last 20 years, particularly aboard ship. Flights will have virtually no direct effects on the region, but they can be expected to have many powerful indirect ones.

South Pole in wrong place, scientists say

America Online, LONDON (contributed by Pete J. Anderson)—The South Pole is in the wrong place, or at least it was, U.S. scientists say.

Researchers working in Antarctica admitted they had been marking the wrong spot for years. It took measurements from the satellite-based Global Positioning System to set them right, the *New Scientist* magazine reported Thursday.

The true South Pole is only about 18 inches from where it had been marked, but the change is enough to put a kink in a line of annual markers, the magazine reported.

The position of the geographic South Pole has to be remarked every year because the ice sheet that the marker stakes are hammered into moves. It moves in a straight line, creating a new row of metal markers.

Gordon Shupe of the U.S. Geological Survey told the magazine that he personally visited the location to make sure the pole was now accurately marked. "It's not a big change," he said.

Antarctic ice pack found to be polluted

***The Fairfax (Va.) Journal*, "Earth Week," 29 Dec 1995, p. A2 (contributed by Peter Baretta)**—The Tokyo-based National Institute of Polar Research announced it has found that the Antarctic ice pack was gravely polluted with radioactive tritium by four U.S. atmospheric nuclear tests during 1963. Researchers found that the level of tritium in the 1964 layer of Antarctic snow is 500 times higher than normal. This discovery substantiates the theory that atmospheric nuclear testing in the Northern Hemisphere polluted the entire globe.

ANNOUNCEMENTS

CGC EASTWIND WAGB 279
Reunion in Boston–24-26 May 1997
Contact: Earl T. Ellis Jr.
37-C Jefferson Drive, Maple Shade, NJ 08052
609-667-0320

U.S.C.G.C. Burton Island
(WAGB-283) Reunion
Operation Deep Freeze
April 28-May 2, 1997 • Reno, Nevada
Contact: Greg Reel
4900 NE Park Lane, Kansas City, MO 64118
816-454-7991.

If you are planning a reunion, let us know as soon as possible so we can publish the details in a timely fashion. Better still, we will publish "inquiries of interest" in reunions, for members of polar expeditions. Then, after the celebration, we will carry an article with the details of the get-together.

Polish adventurer reaches North, South poles in 1995

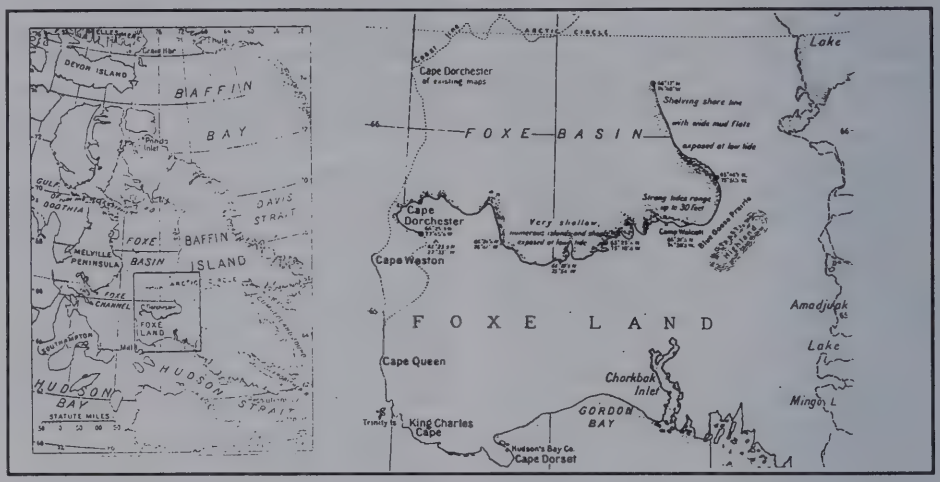
Columbus Dispatch, **28 Dec 1995, WARSAW, Poland**—A Polish adventurer has become the first person to trek to the North and South poles in one year.

Marco Kaminski of Gdansk and a friend reached the North Pole on foot this spring, dragging heavy sled with food and equipment.

Kaminski then set out toward the South Pole with 260 pounds of supplies and equipment on a sled. He reached his goal Tuesday after 53 days, the Polish news agency PAP reported yesterday.

this year, Norwegian Borge Ousland became the first person to reach both poles without assistance, but he did not make the trips during the same year. (See companion article, *Frostbite* on page 17.)

Canadian-American Expedition to Baffin Island - 1996



By Sheldon Bart, American Expedition leader—Just south of the Arctic Circle, on the remote tundra of Baffin Island, the northernmost part of North America, is a strange, extensive cliff-like formation reminiscent of the American Southwest.

It is almost certainly the only wilderness area on earth named for an American publisher.

The Putnam Highland was first discovered by Europeans in 1927, by an expedition led by the future husband of Amelia Earhart, New York publisher George Palmer Putnam. Laurence McKinley Gould was second-in-command.

The great Arctic mariner Captain Bob Bartlett of Brigus, Newfoundland, commanded the schooner, the *Effie M. Morrissey*, on which the expedition embarked from New York.

The major achievement of the Putnam expedition was the exploration of the southwest coastline of Baffin Island. This was accomplished by Putnam, Gould and five others in an open whaleboat sailing along the uncharted coastline for the better part of a month. The rather large body of water they navigated—now called Bowman Bay—had previously been mapped as land (see accompanying map).

The group backpacked inland from the head of the bay to reach the sole distinct landmark in the region—the distant limestone formation standing out sharply against the sky. Putnam named the highest promontory Gould Mesa, for Larry Gould. They encountered several deep canyons etched within this stark formation, their walls rising to average elevations of 600-700 feet. Putnam named them in honor of Bob Bartlett and other celebrated explorers of the 1920s such as Roy Chapman Andrews and James L. Clark, of the American Museum of Natural History, and naturalist William Beebe. It was a grand salute to the extraordinary people who played a leading role in a remarkable era of adventure and accomplishment.

The Putnam Highland has been on the map since 1928. But Gould Mesa and the canyons have never been mapped, the place names have never been made official, and the history of the expedition has been all but forgotten.

This summer, a new expedition will return to the Putnam Highland—a team of four Americans and two Canadians pursuing a research program sharpened in consultation with Geomatics Canada, the Geological Survey of Canada, the Canadian Permanent Committee on Geographical Names and specialists in geography and geology at the University of Ottawa and Hunter College of the City University of New York.

The objective is to put those "lost" features on the map and pick up the geographical and geological research where the Putnam Baffin Island Expedition left off.

Stratigraphy of the region will be studied, the Geological Survey of Canada will be provided with the first complete rock and fossil collection from the Putnam Highland, and the east scarp of the Putnam Highland will be explored. This is an area neither Putnam nor J. Dewey Soper, the Canadian explorer of Baffin Island, ever reached and for which aerial photographs—incredibly—are not even available.

***Secretary's Note*: This is a very well planned expedition - one of the few opportunities left to map new land. Unfortunately, it is currently short of cash. Anyone interested in helping can contact Sheldon Bart directly 201-451-3860**

90 Degrees North:The story of a Lands' Ender's trip to the "Top...

...of the World," the North Pole, aboard Russia's nuclear-powered ice breaker Yamal

Icebreaker *Yamal* at the North Pole

***Lands' End Direct Merchants*, October 1995, by Irv Grit**—Explorers have made their way to the North Pole by dogsled, Admiral Byrd flew to it in an amphibian, and the Italian Nobile circled it in a dirigible—but a surface ship with tourists going to the North Pole? Not likely, I thought. But here we were, steaming out of Murmansk, Russia's northernmost port, on a most unlikely cruise ship, the nuclear-powered ice breaker, *Yamal*.

It is Russia's most serious ice breaker. A behemoth designed to keep the Southeast passage, the shipping lanes around the Siberian Coast to the Bering Strait, open through winter.

Our first stop and helicopter landing ("Sign the release before boarding, please.") was Franz Joseph Land, a group of 191 snow- and glacier-capped islands halfway between Murmansk and the North Pole. Uninhabited—in fact, undiscovered until 1873—these islands have been a lifesaver for Arctic explorers forced to "winter over." We visited the remains of their camps, the graves of the unlucky and the ghost town Russian scientific station, "Sedov." Our Arctic history guru, Bob Headland, recounted the hardships of these early explorers as we walked among the rocks and tundra where [the explorers] walked 100 years before.

Arctic ice is usually from three to 12 feet thick with pressure ridges, formed by sheets of ice forced against each other by wind and current, rising as high as 50 feet. Just as wind and current create pressure ridges, they also open "rivers" of water between the floes of ice. Arctic ice, though, is not usually a solid sheet. Broken up by storms and pushed by currents, eventually it becomes pack ice. On our voyage, we encountered three-meter ice (10 feet) and pressure ridges where the ice was several feet thicker. These ridge would occasionally bring *Yamal* to a stop. We would back down two or three boat lengths, then all ahead full, our mighty ship rising up on the ice crushing, splitting and upending chunks the size of tennis courts. When the going became really difficult, our two helicopters would scout ahead for a direct route to the rivers of open water called "leads." Relentlessly, we plowed and zig-zagged through the ice fields between us and the North Pole.

Sky is mostly gray, poleward, with an occasional glimpse of the always-present sun. To the horizon in all directions is an endless expanse of white pack ice, dotted by pools of crystal clear fresh water, the light azure shade of tropical, coral shallows. This beautiful effect is accentuated on those rare occasions when the sun breaks through but is spectacular at any time. Days are 24 hours long, and the bridge is open to visitors who can't sleep. On one crystal clear, sleepless day/night during our return voyage, the sun appeared to orbit around the ship, low in the North, higher in the South. It never really rose above a late afternoon position (Wisconsin summer), and it never set.

With the North Pole a day away, our captain, Andrei Smirnov, who had by now attained folk hero status with the passengers, nudged *Yamal* into an ice floe, lowered the gangplank and treated us to an Arctic walkabout and the startling photo opportunity which became this month's cover.

The Russian crew members loved a party! At 88 degrees North the ship was again brought to a full stop, and we gathered on the afterdeck for a solemn occasion—the captain, persuading King Neptune (ship's diver, Sergei) to let us pass to the North Pole. Coffee urns of Dietmar's Arctic grog (hot red wine, whiskey and vodka seasoned with cinnamon) produced a guaranteed favorable result. We danced and drank and feasted and, with the Russian crew, had a great time. I worried, who's tending the boiler?

Next day, our captain jockeyed *Yamal* into exact position—90 degrees north. We toasted the 12th time that a surface vessel had reached this hallowed spot on earth.

Alarm Grows As Arctic Animal Parts Market Spreads

Excerpted from *The Boston Globe*, 11 March 1996, p. 25, by Colin Nickerson, MONTREAL (contributed by Michel Zilberstein)—In the classified section of Canada's *Globe & Mail* newspaper, an ad placed by an Eskimo hunters' group: For Sale. Polar bear gall bladders. Pls. respond Coral Harbour, Northwest Territories."

The bile from bear galls is prescribed in Asian traditional medicine as a pricey panacea for liver and cardiac complaints. Inuit hunters are looking to cash in.

And they aren't the only ones.

To the alarm of environmental activists and conservation officials across Canada and the United States, an exploding demand for esoteric pharmaceuticals in Asian communities from Hong Kong to Vancouver, Seoul to San Francisco is creating a huge underground commerce in organs and other wild animal parts.

Sam Emiktowt, the Inuit, or Eskimo, hunter who placed the controversial advertisement for polar bear gall bladders, is offended by the suggestion that peddling parts from the greatest of Arctic beasts is either callous or at odds with the sound practice of wildlife conservation.

"Inuit have great respect for polar bear," he said. "It is traditional in our culture to use every bit of the animal that can be used. How can that be bad?"

Polar bears are plentiful in Canada's far north. Inuit are allowed not only to hunt the creatures for their own use but to guide hunters from outside—who pay up to $25,000 for the privilege, an important source of income.

But activists say trade in animal organs for use in Asian remedies is different from traditional hunting—and even different from the sale of pelts or claws—because the huge profits give incentive to the sort of organized poaching that has brought some wildlife populations in Africa and Asia to the edge of extinction. Asian bears, like African rhinos, have been nearly wiped out by the voracious demand for traditional cure by Chinese, Koreans and, to a lesser extent, Japanese.

Alberta game officers last month completed a massive sting operation against poachers and illegal game traffickers, confiscating bear gall bladders and other parts

reckoned to have a value of $500,000 had they reached intended Asian buyers.

Before you kill a wild animal, you should have a good reason," said Michael O'Sullivan, executive director of the Humane Society of Canada. "Shipping penises off to China doesn't seem a very good reason."

Eating Seal Fat Helps Polar Bears Maintain Healthy Cholesterol Levels

IOWA CITY, Iowa (contributed by Dr. Edgar Folk)—They're swathed in fat and thrive on seal blubber, but the not-so-average polar bear can teach humans a thing or two—these bears manage to escape the dangers of high cholesterol that can cause hardened arteries in humans.

Dr. Edgar Folk, professor emeritus in physiology at the University of Iowa College of Medicine, explained how polar bears thrive on fat and why it may have implications for humans in a talk at the annual meeting of the Ecological Society of America, held in conjunction with the American Institute of Biological Sciences meeting in Honolulu, Hi., Aug. 9-13 [1992].

"As far as we know, in spite of their high-fat diet, polar bears do not develop fatty lesions in their arteries, which can cause health problems for humans," says Folk.

No one is sure how they work but the fatty acids called omega-3 that are found in seal fat seem to protect polar bears from the damage of fat in the blood stream, Folk says. Omega-3 comes from the lower end of the food chain; polar bears get it from eating seals, seals get it from eating fish, and fish get it from single-cell marine plants and animals.

"When humans have high cholesterol, they're told to stop eating fat," says Folk. "But the bears we studies on the Hudson Bay ice pack had the lowest cholesterol levels when they ate the greatest amounts of fat." When the bears stopped eating fat, their cholesterol levels soared.

A study of the causes of death among 8,000 Canadian Inuits shows that the incidence of heart disease in this indigenous population is one-fourth

Beginning in March until the ice-pack melts in June, some 1,600 polar bears eat their fill of seal blubber, leaving the rest of the seal, including the protein, for foxes and birds, he says. When seal blubber is unavailable, the bears begin a fast that usually lasts four months (although some females fast for eight months).

After taking blood samples while the bears were eating seal blubber, Folk's team of researchers took blood samples from fasting bears in a bear confinement facility in Churchill, a small town on Hudson Bay. (The confinement facility houses errant bears during the summer until they can be returned to the ice pack in the fall, Folk explains.)

The researchers found that the cholesterol levels of the fasting bears were significantly higher than those of the bears feeding on seal blubber. And that's how the omega-3 fatty acids come into the picture.

Folk suggests that the correlation might also hold true for people. A study of the causes of death among 8,000 Canadian Inuits shows that the incidence of heart disease in this indigenous population is one-fourth that among Canadians as a whole, despite the much higher fat content of the Inuit diet. Most of the fat eaten by Inuits comes from omega-3-rich fish or blubber.

MP Defends Native Traditions

Speaks Inuktitut, defying colleagues

***The Washington Times*, 26 Nov 1995, p. A10, by Robert Kozak, OTTAWA (contributed by Peter Barretta)**—In Canada's House of Commons, the interpreters, who work in English and French, fall silent when Jack Anawak rises and says, "Qujannamik, Orkratee."

Mr. Anawak has thanked the speaker in Inuktitut, an ancient language spoken across Canada's Arctic far north that no else in the parliamentary chamber understands. By speaking his native tongue and refusing to use the official languages of English or French, he has angered other members of Parliament.

Mr. Anawak, who was born in a tent in the frigid Arctic, is the only Inuk (the modern term for Eskimo) in the lower house of Parliament, but he says he will continue to speak his native tongue there. He hopes to boost one of Canada's original languages, which is under growing pressure from "foreign" influences.

Ironically, one of the members who has attacked Mr. Anawak is a member of the Bloc Quebecois, which promotes independence for French-speaking Quebec and the preservation of the French language.

"The member talked to us in language I don't know and I don't understand," Bloc Quebecois member Pierrette Venne said recently. "As far as I know, this does not constitute one of the official languages."

Mr. Anawak, a member of the governing Liberal Party, has also been accused of "contempt of Parliament" by an MP from the Western-based Reform Party. English and French are the official languages of Parliament, but there are no rules prohibiting the use of other tongues.

"Whereas English or French have been here for four or five hundred years, [my language] has been around for four or five thousand," said Mr. Anawak. He is the spokesman for the minister of northern and Indian affairs in the lower house when the minister is away, and he says it is important to speak in the language of most of his constituents.

"To me it is part of why I do it. A large part of the area I represent is unilingual. It is in honor of them that I do it. How can I not speak Inuktitut? It would be a betrayal of my constituents if I did not carry on the principle," he said from his office in the Canadian capital, Ottawa.

The 44-year-old Mr. Anawak will almost always answer a question in English as well a Inuktitut so other MPs can understand what he said.

He represents one of the world's biggest electoral districts, spanning three time zones, and says there are perhaps only five countries in the world that are bigger than his district. The area, known as Nunatiqq, means "beautiful land" and runs from Yukon on the Alaska border to Baffin island across from Greenland and up to the North Pole.

But it is home to only about 25,000 people, at least 85 percent of them Inuit, the plural of Inuk. half the people in the region speak only Inuktitut.

The Inuit consider the word "Eskimo" derogatory because it means "eater of raw meat."

Mr. Anawak's actions highlight concern over the survival of native languages in Canada., which are being encroached upon by television, radio and music from the south. In the past, many natives were forced to abandon their languages and learn English or French.

"Inuktitut is under threat, but Inuit leaders are very determined to keep the language alive," said Jan Glyde, manager of the Arctic Society of Canada, an Inuit advocacy group. Inuit political groups have set up a fund to help the Inuktitut language and culture survive.

Arctic Tribe's Hard Life Unchanged for Centuries

22 Nov 1994, by Michael Specter, SALEKHARD, Russia—A nomadic tribe of reindeer herders who dress in skins, practice ritual sacrifice and have been using the same types of homemade tools and wooden sleds for more than 1,000 years may hold the key to a mystery that has long baffled archeologists.

The Nenets, who wander across the northernmost reaches of the Siberian Arctic, eat raw fish, drink reindeer blood and live year-round in reindeer-skin tepees called chums. Last summer, archeologists came upon a group of about 1,000 Nenet reindeer herders who have had almost no contact with Western culture. Archeologists long eager to connect the ancient peoples of Scandinavia to the Eskimos of the New World thousands of miles away say that this group may help provide the essential missing clue.

And they may do more than that. The Nenets, who have preserved and extended a cultural heritage that may be 10,000 years old, could provide the best proof yet that humans not only can adapt to the harshest possible conditions, they may choose them.

Migrating across the Yamal peninsula, where the Ob River and the Ural Mountains meet the Arctic coast, the Nenets have flourished here in one of the most inhospitable places on earth. At least

Despite temperatures that dip to minus-60 degrees Fahrenheit in the winter and soar to 95 degrees Fahrenheit in the summer, despite 70 years of Soviet power and despite their migratory habit of wintering near here on the taiga and traveling with their herds to summer pastures in the central and northern Yamal, thousands of Nenets exist as if they lived in the fifth century. Some of them appear never even to have known there was a Soviet Union.

"They are fanatically motivated to preserve their traditions, their language and their rituals," said Igor Krupnik, a leading ethnographer with the Russian Academy of Sciences who, working with a Smithsonian group, has focused on the cultural heritage of the Nenets. "No Arctic people that we know of have persisted for so long and so defiantly."

Fossilized fish in Antarctica

The Antarctica Project—Paleontologists have found a 20-square-mile layer of rock containing massive numbers of fossilized fish in Antarctica. This evidence has converted William Zinsmeister, a Purdue University scientist who has been excavating in Antarctica for 20 years, into believing the theory that an asteroid smashed into the earth 65 million years ago and killed off most of the dinosaurs and many other species. As Zinsmeister told *The Boston Globe* on Nov. 2, "...this is the first time you could put your hands on an actual victim. I now think there is evidence for some kind of mass kill at the end of the Cretaceous period."

South Pole Dome: Let's Keep It!

by Gary Noble Curtis, structural engineer, Long Beach, Calif.—Recent press stories have reported that the South Pole Dome is in dilapidated condition and is scheduled to be dismantled and replaced by another structure in the very near future (see Vol. 2, No. 5, p. 24). Perhaps there is a better alternative!

In 1969, the proposed Geodesic dome intended for the South Pole was fully analyzed by computer before construction. In the design specifications for the dome the Naval Facilities Engineering Command required that the dome be completely analyzed; no approximate methods. Previously structural analysis of geodesic domes was performed by approximate methods based on thin shell analogies. A data base would thus be developed to monitor the effect of the elements upon the dome for both construction and future maintenance. TEMCOR, a small firm in Torrance, California that had been building geodesic aluminum domes under license from Buckminster Fuller, responded to the challenge to build the structure in this revolutionary manner and hired Long Beach, Calif., consulting structural engineering firm Minasian Associates to do computer analysis and develop the data base.

After manufacture, the dome was partially assembled at the TEMCOR plant in Torrance to verify assembly techniques. It would not be possible to erect this dome wearing mittens and bulky clothes with the tools normally used in California. The battens used to connect the triangular panels to the struts were usually fastened with small screws. Instead, a special extrusion die for the struts was created, forming a rib that could be bent over a spline with a special staking tool to secure the panel. This, a person could do with mittens. Then the panels, struts, fasteners and special tools were crated, trucked to Rhode Island, shipped to McMurdo and flown to Amundsen Scott Base.

South Pole Dome was completed in early 1973 with a life expectancy of no more than 10 years due to the anticipated drift conditions. It was expected to move toward the South Pole at the rate of 250 feet per year. The rate of travel turned out to be a whole lot less—30 feet per year—and the useful life...more than doubled.

In 1982, the writer was asked to conduct an engineering survey of the dome. My inspection revealed a large sink hole had developed around the sewer outfall - there was concern that the dome might be affected. The survey of the utilidor tunnel extending under the dome and on to the outfall showed a modest dip under the drift and a dramatic 10-foot drop at the outfall end. Fortunately, it did not affect the structure of the dome.

The actual drift patterns that developed around the dome looked very much like the photos of the wind tunnel tests that were originally performed on a small model of the dome, using borax for snow. The wind at the South Pole rarely exceeds 35 mph and blows predominately in one direction. As a result, there is a permanent wind scour that removes snow on the windward side while a drift accumulates on the leeward side.

However, The dome, however, had dropped a foot and a half on the drift side. It was determined that this was due to the crushing of the snow material, or "firn," under the drift. The drift had reached a depth of up to 30 feet. A large crack in the snow floor of the dome extended from one side of the drift to the other, as if the drift was taking a big bite out of the firn. The loads on the dome due to the drift were exceeding 600 pounds per square foot in some areas. Struts were deflecting almost half an inch over about a 10-foot span. Some of the thin skin panels were buckling under the pressure. The dome had been designed to withstand 300 pst but it hadn't been designed for the differential settlement that was now trying to tear the dome apart at the base.

The 1982 survey concluded that the dome was still functioning and an imminent failure was not expected, but the structure should be carefully monitored. The fact that the foundation was tilted would not have been a problem if the base had merely tilted in a smooth plane. It didn't. There were some bumps and twists that could cause problems.

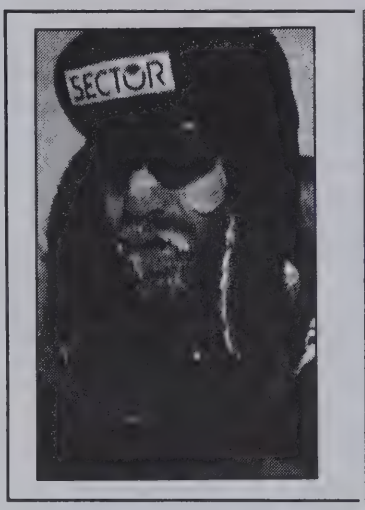
On a follow-up survey in 1989 we discovered that settlement was now over two and a half feet, and the tension ring—the most vital single element in a dome—had fractured in two places. The saving grace, however, was that the encompassing drift was preventing the dome from spreading out and collapsing. The dome, 17 years after completion instead of the planned 10 years, was still in a reasonable shape.

The dome was still tilted, but the foundation was no longer distorted out of plane. Other anomalies were reported back to TEMCOR where a computer analysis of the dome verified that these distortions were within tolerable stress limits.

Fortuitously, the staking tools were unearthed (unsnowed!) during the snow removal effort . They were used used to complete the peening of many struts that were overlooked during the original construction. This explained the buckling of many of the panels that had been observed in 1982. Without proper edge connections, the thin panels could pull away from the struts and buckle under the snow loads. Panels that were properly connected did not buckle in this manner.

When we finished, the dome was as good as new and serviceable for another 20 years. With a nominal periodic effort at drift removal, the useful life could be indefinite. After the proper fastening of the panels that was accomplished in the repair effort, the dome is now stronger than it ever was during its past life. It should be noted that the nature of this dome design is not subject to sudden failure such as may be possible for some thin shell structures. Compared to other domes, this is a highly redundant structure that has already proven it can take great abuse. Perhaps, with a little tender loving care, we can preserve it for another generation or two.

Frostbite Ends Ambitious Antarctic Ski Trek



Contributed by Nathan Frank

***The Wisconsin State Journal*, "World," 3 Jan 1996, p. 6A, by Nils Myklebost, OSLO, Norway (contributed by John Ong)**—Frostbite ended Borge Ousland's solo cross-Antarctic trek last weekend, but it did not chill his pride about being the first to reach both the North and South poles alone and unaided.

"I'm not disappointed. I'm a realist. When you set goals that high, you can't be disappointed if you fail," the 33-year-old Norwegian told *The Associated Press* by telephone from Chile, where he is recovering from his expedition.

Ousland reached the South Pole on Dec. 21 after skiing alone and without outside help halfway across Antarctica. He did the same last year at the North Pole, making him the first to reach both poles by foot.

But he had to abandon his goal of also becoming the first person to cross the entire Antarctic alone when he developed severe frostbite four days after leaving the South Pole on the second leg of the trip.

"It was no surprise. I got frostbite at the beginning of the trip, but the sores got infected and wouldn't heal," Ousland said.

A doctor at the South Pole advised him not to continue, but Ousland set off anyway, carrying a sail and hoping a tail wind would speed his trip and lighten his work.

The wind never showed up. And the injuries grew worse.

"The important thing for me is to have the courage to make one's dreams come true.

"It's not only a question of the physical and mental accomplishment of going from A to B, but of daring to live the dream," Ousland said.

Just making the first leg of his trip, to the Scott-Amundsen base at the South Pole, was an astonishing feat.

Ousland skied 838 miles in 44 days, dragging a huge supply sled over the monotonous landscape for 10 hours each day. At night he put up a tent in temperatures of minus-40 and ate meals of dried food.

Early on, he realized his sled was too heavy and he dumped 90 pounds of supplies to get its weight down to 300 pounds.

That meant giving up his cream of crossing the continent unaided. No matter.

"Skiing alone for so long gives you a different perspective on life. You learn to measure yourself and life in general by a different yardstick," Ousland said Tuesday. "You really understand what a small piece you are in nature's greatness."

The explorer said he finds it hard to compare his treks.

"They're like two different galaxies....The North Pole is more dangerous, while the South Pole is more of a mental challenge, with the endless snowfields," he said.

Swimmers, Scientists Test Antarctic Waters

America Online, 27 Jan 1996, by Mark Trevelyan, LAKE VANDA, Antarctica (contributed by Peter Anderson)—It's a swimming club strictly for masochists—the group of hardened men and women who have broken the ice and bathed naked in Antarctica's Lake Vanda.

As correspondents watched from a safe distance, two rugged New Zealanders passed the initiation on a recent visit to the pristine lake. Seconds after taking the plunge, they emerged, gasping, to pull on layers of survival clothes.

Clive Howard-Williams, part of the small group of resident scientists, recommends swimming about once every 10 days in the absence of showers on site.

But his chief interest is in Vanda's unique ecology and the natural filter system that enables it to maintain its purity. Scientists hope the area could provide clues to global warming and ways to help clean up the world's polluted rivers and lakes.

"There's only one lake, as far as I know, that has water as optically pure as lake Vanda, and that's Crater Lake in Oregon. This is about the purest lake water you can get."

A thick permanent ice cap prevents winds from mixing the waters of Vanda, which lies in an arid desert region known as the Dry Valleys. The lake has formed into layers, with fresh water at the top and thick brine, four times saltier than the sea, at the bottom.

Remarkably, the temperature in the depths remains stable year-round at a warm 72 degrees Fahrenheit, even though the water at the top is near freezing. The clarity of the water enables the sun's light and heat to pass straight through.

"The water's so clear that heat can penetrate down to the brine layers....The ice on the top just makes it like a glasshouse," Howard-Williams said.

Using a small tractor to cross the ice-covered lake, he takes reading through a bore hole that gives off an eerie glow from the brilliant deep blue of the water.

For climatologists, Vanda provides a gauge of regional and possible global warming because its waters have risen about a metre a year on average for the past decade. (This year they have bucked the trend by falling some six inches.)

Rising temperatures melt the glaciers that feed the Onyx River, which, at 18 miles, is Antarctica's longest river. The Onyx, in turn, flows into Vanda, replacing the one foot of ice that evaporates from its surface each year.

Neptune's Window

By Brian Shoemaker—Who discovered Antarctica—the continent? The British have advanced Bransfield; the Americans, Nathaniel Palmer; and the Russians, Bellinghausen as the prime contenders. Are there others? Perhaps? Whom one champions depends upon the criteria that one uses for whomever one wants to champion and the criteria whereby one dismisses the others. None of these men set foot on the continent; all are championed as having "seen" the Antarctic mainland from the deck of a ship well out to sea.

"Seeing the continent" being generally accepted as the criteria for discovery by all parties opens up the possibility for discovery to a broader range of potential discoverers, mostly sealers, who earlier than all of the above, ventured to the South Shetland Islands to the north. Is it possible to view the Antarctic Peninsula from these isles which entertained the first seal hunters in 1818 or perhaps before? Surely during the slaughter, some farsighted hunter must have climbed the peaks of Livingston island and scanned the horizon looking for fresh prey. On a clear day could he, did he, see the mainland? That section of the continent that, for political correctness, is today accepted by all champions as the Antarctic Peninsula, at least publicly.

Deception Island certainly can be seen from Livingston Island even in bad weather. Can the mainland? Can it be seen on a good day? The records relate that Pendleton climbed the cliffs, peered south and, thinking that he saw something, sent young Nathaniel Palmer out on a reconnaissance culminating in Palmer's "discovery of Antarctica" in November 1820.

But did not Pendleton "see the continent first?" If one can view the mainland from Deception Island and/or the heights of Livingston Island today, it stands to reason that some sealer did so before Palmer, Bransfield or Bellinghausen. It was their business to scout for new lands with lucrative seal rookeries to exploit, and they were always on the lookout. If one peers from Livingston Island or Deception Island towards the Antarctic Peninsula, can he make out land? Can he see that far?

I visited Whalers Cove on Deception island four times in December 1995 while lecturing tourists who sailed abroad the *Russian Research Ship Akademik Ioffe*, guests of Marine Expeditions of Toronto. Each time I took a group on a discovery trek up to Neptune's Window, that rectangular break in the caldera wall, where one can peer southeast. The first three visits my primed entourage gazed in disappointment into the low-lying fog, blowing sea spray and choppy seas. Beginning to doubt my theory, but trapped into a course of action, I led a fourth group to the crater rim shortly after Christmas. Behold! Not just a glimpse, but a buttress at 60 miles of peaks and glaciers precipitously dropping into the sea: a panorama which filled Neptune's Window. I have some very good photographs to verify my point.

"Discovery" of the Antarctic Continent from Deception island in 1820 was now at least conceivable. Is it possible to see the mainland from Livingston Island or Greenwich Island eight to 10 miles further distant, but higher for extended vision? I visited Hanah Point on the south coast of Livingston Island last December, led a group of interested tourists to high ground, and peered southeast...to no avail; the weather would not cooperate.

Perhaps next season I will again visit Livingston island with a group of latter-day explorers for another look to the southeast...my entourage and I straining our eyes, trying to relive an unrecorded discovery by a man more interested in the pursuit of the fur seal than in having his name emblazoned on that cold austral land incognita.

Exploratory Cruise of Captain Nathaniel B. Palmer in November 1820.

Fast-Acting Sailors Save Antarctic Scientist's Life

***Seabee Coverall*, 1 Dec 1995, p. 11, by JOC Brady Bautch (contributed by Billy Ace-Baker)**—The teamwork of Naval Support Force Antarctica (NSFA) and Antarctic Development Squadron 6 (VXE 6) saved the life of a scientist who was working in a remote region of Antarctica on November 16th.

Air traffic controllers from NSFA received an emergency radio call from a scientific field camp, located 50 miles west of McMurdo Station, advising that one of their scientists was in medical distress. Immediately, a twin-Huey helicopter from VXE-6, which was already airborne, was diverted to the camp to bring the patient back to McMurdo Station.

Upon arrival in McMurdo Station, the patient, a female Swedish citizen, was met by NSFA's medical officer. It was decided the patient should be medically evacuated to Christchurch, New Zealand, 2,100 miles north of McMurdo Station, to better deal with the patient's cardiac and respiratory distress.

Fortunately, VXE-6 was already preparing one of its ski-equipped LC-130 Hercules aircraft for a resupply trip to the South Pole, and planning for this contingency had already been done. The flight crew immediately reconfigured the aircraft to support the medevac operation. Just prior to takeoff, the patient went into shock and stopped breathing. NSFA medial staff successfully resuscitated and stabilized her, and the flight was able to take off at approximately 1 a.m., November 17th.

The NSFA force medical officer, VXE-6 flight surgeon and two NSFA hospital corpsmen provided constant care to the patient during the long flight. Eight hours later the flight landed in Christchurch, and the patient was immediately transported to Christchurch Public Hospital where she is reported in good condition.

Quick News

Iditarod: King Captures Second Championship

***The World*, 13 March 1996 (contributed by Brian Shoemaker)**—Jeff King took advantage of his rivals' impatience to easily win his second Iditarod Trail Sled Dog Race. "It's my opinion that they got a little excited racing each other," King said Tuesday after coasting into Nome. "I don't really think my dogs sped up. I think the others slowed down."

King, 39, a former Northern Californian who learned how to mush as a ranger at Denali National Park, finished the 1,151-mile race in 9 days, 5 hours, 43 minutes. It was the second fastest time ever. Doug Swingley of Simms, Montana, who set the race record of 9 days, 2 hours, 42 minutes last year, finished second in 9 days, 8 hours, 3 minutes.

King, who earned $50,000 from the $300,000 purse along with a $30,000 pickup truck, finished with six of his original 16 dogs in harness. He was carrying another dog on the sled as he led his team under the burled arch that marks the official end of the race.

Five-Time Champion Ejected From Iditarod

***The Washington Times*, 6 March 1996, p. B3 (contributed by Peter Barretta)**—Five-time Itiarod champion Rick Swenson was ejected from the Trail Sled Dog Race because a dog on his team died in the first day of racing.

Race officials took the action Monday after reviewing the incident. The decision by race marshal Bobby Lee, race judge Jack Welsh and Stuart Nelson, the head veterinarian, was unanimous.

Swenson told race officials his team went through some open water between Yentna and Skwentna, and the team didn't seem right afterward. He stopped and found Ariel, a three-year-old female, down, then spent 15 minutes trying to revive her.

"Our rules were really clear that if we couldn't find conclusive evidence that there was an outside force beyond the musher's control, they'd be withdrawn. And the mushers agreed to that," Lee said.

PEACEFUL transfers of territory between countries are rare, but one has just taken place. On February 8th, a little piece of Britain became Ukrainian. Faraday, a base on the Antarctic peninsula that has housed British scientists since 1934, has been given by the British Antarctic Survey to its Ukrainian counterpart, on condition that the Ukrainians continue its programme of research into the ionosphere. It will now be known as Vernadsky.

Contributed by Lewis O. Smith

Shelter from a storm: instant snow house

***National Geographic*, January 1996 (contributed by Peter Barretta)**—Abraham Niaqu, an Inuk in far northern Quebec, puts the final touches on a temporary snow house while on a hunting trip on Lake Provungnituk.

Hunters caught away from home, and unwilling to trust tents in winter storms, still build shelters called *illuvigait*. Igloo is the English name for a more permanent snow home, no longer used in the Canadian north.

An experienced hunter like Niaqu builds a snow house in 30 to 40 minutes with wind-swept, hard-packed snow. Wielding a machete-like snow knife or even an ordinary wood saw, the hunter carves out blocks of snow two to three feet long and four to six inches thick. He fits them together from the ground up into a snug dome six to 10 feet in diameter and caulks the racks with more snow. Says Craig d'Entremont of the Science Institute of the Northwest Territories, "I've slept in such shelters at minus 40 degrees Fahrenheit with caribou skins above and below me and been very comfortable.

'Free Willy' Star Not Wanted At Home

***The Washington Times*, 10 Jan 1996, p. A10, REYKJAVIK, Iceland (contributed by Peter Barretta)**—Keiko, the three-ton male killer whale made famous by the film "Free Willy" will not be welcome in its home waters off Iceland because he might carry contagious diseases, Icelandic authorities said yesterday.

Johann Sigurjonsson, deputy director of the state-run Marine Research Institute, told Reuters news agency the whale could pose a health risk to killer whale stock near the North Atlantic nation. He described suggestions that the whale should be brought back to Iceland as a publicity stunt.

Young Explorer's Page

Walrus Sanctuary Opened for Hunt

***Alaska*, Feb 1996, p. 15, (contributed by Peter Barretta)**—After petitioning state and federal wildlife agencies for years, Natives are once again allowed to kill walrus on Round Island, a wildlife sanctuary in Bristol Bay. The traditional walrus hunting area for Yup'iks was closed to hunting in 1950. Last October, hunters from seven villages shot their combined quota of 10 animals. The meat, organs and hides were divided among the villagers, and the tusks were donated to schools for ivory carving classes.

Thousands of male walruses haul out on Round Island each summer, in one of the largest assemblages in the world. Annual hunts are expected to continue, said Bruce Bartley of state Fish and Game.

Icebergs

The New York Times, 19 Sept 1995, p. C7 (E7?) (contributed by Peter Barretta)

Q. *A co-worker says icebergs, which float around in the salt water of the ocean, cannot possibly be freshwater ice. Is this true? Where do they come from?*

A. The average run-of-the-ocean iceberg is the offspring of a freshwater glacier or ice shelf, both of them made up of centuries of compacted snow. A glacier or ice shelf is said to "calve" in giving birth to an iceberg.

Some Antarctic icebergs have saltwater ice frozen on the bottom. They occasionally capsize and can then be identified by their green color. The green results from the combination of the normal blue of pure ice and yellowish-brown organic material—dead plankton and algae—dissolved in the ocean water.

Mama bear and her cub after a seal lunch. They came right up to the ship for a closer look at the interlopers.

Children On Antarctic Mission

BEIJING (contributed by Pete Anderson)—China plans to send a team of children aged 10 to 16 on a "juvenile expedition" to the Antarctic, an official news agency reported Wednesday.

The children, who must be Chinese but may be living outside China, will be sent at the end of the year to conduct scientific experiments at the Antarctic's Great Wall Station.

Whales May Hold Answer to Oil Spill Clean-Up

***Alaska*, Dec 1995, p. 17, by Dimitra Lavrakas (*The Arctic Sounder*) (contributed by Peter Barretta)**—Bowhead whale stomach enzymes have the potential to dissolve chemicals from oil spills, says an Oregon State University biologist. Colin G. Orpin traveled to Barrow for the annual whale hunt to collect stomach bacteria for his study.

"Bowheads rarely get cancer in their stomachs, which points to their ability to break down cancer-causing pollutants that are present in Arctic waters," Orpin said. Forty-three pollutants have been identified in the ocean, as well as oil, which may be the result of man-made spills or natural seepage. OSU plans to apply for the original patent for the product, and the university has applied for grants from oil companies and the International Whaling Commission to continue research and development.

The Biggest Hike of All

Still Setting Records on Denali

***Alaska*, Oct 1995, p. 13 (contributed by Peter Barretta)**—Twelve-year-old Merrick Johnston not only joined the elite among mountaineers when she stepped onto the 20,320-foot summit of Mount McKinley, she also became the youngest person ever to do so.

The Anchorage girl spent 26 days on North America's highest mountain, in one of the stormiest climbing seasons on record. At one point, Merrick, her mother Jennifer, and guide Steve Young had to hole up in tents for seven days at the 17,000-foot level. Merrick has hiked since age 5. She and her mother trained for the last year, often on Flattop Mountain, a popular trail overlooking Anchorage.

Merrick toppled the female age record held for only five days by Tiffany Hanson of Talkeetna, a 15-year-old who reached the summit with her father on June 19. It was Tiffany's second attempt. Last year, the high-school cross-country skiing athlete was stuck in blizzards for nine days at 14,000 before giving up.

Russian Spy Plane

Lifts Its Sights From U.S. to Polar Ozone

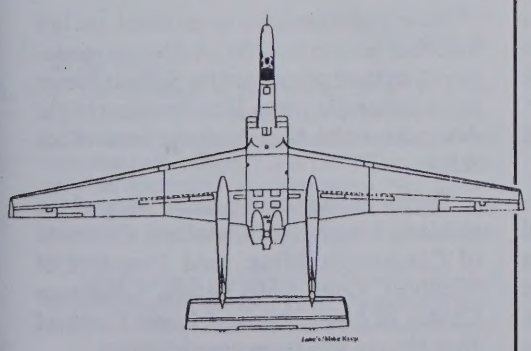
***The New York Times*, 17 Oct 1995, p. C4, by Malcolm W. Browne (contributed by Peter Barretta)**—For the first time since the end of the cold war, a Russian high-altitude spy plane has been put at the disposal of Western European scientists, who will use it to study depletion of the protective ozone layer over Arctic regions.

The European Science Foundation announced this month that Russia would provide a specially modified Myasishchev M-55 airplane for high-altitude Arctic studies during the winter and spring months of 1996 to 1998. The M-55 Geophysika is roughly equivalent in purpose and performance to America's U-2 reconnaissance plane, which has been renamed the ER-2 and flies research missions for NASA.

However, [the Russian plane] can carry much heavier loads than the American plane, enabling it to fly large analytical instruments to altitudes up to 67,000 feet.

Most atmospheric scientists attribute the ozone depletion to increasing quantities of chlorofluorocarbons and similar Freon compounds released into the atmosphere by human activity. Although production of these chemicals is now prohibited in most industrial nations, their effects on the ozone layer are expected to increase and linger for many years (See companion article page).

According to the European Science Foundation, which is based in Strasbourg, France, the M-55 provided by the Myasishchev Design Bureau, the Russian Central Aereological Center and Aviecocenter will be able to study the chemical reactions believed to occur on the surfaces of fine ice particles that make up polar stratospheric clouds. These clouds, which appear in early spring, seem to play a pivotal role in catalyzing the chemical reactions that lead to the destruction of ozone.



Last of Navy Helos in Antarctic

by Guy Guthridge—A ceremony at McMurdo's helicopter pad on Saturday, 3 Feb 1996, marked the U.S. Navy's last helicopter support mission in Antarctica, ending a half-century's tradition of naval rotary-wing aircraft support to antarctic science. The Navy had introduced helicopters to Antarctica during Operation Highjump 49 years ago and, in the following season of 1947-48, built an entire mapping and reconnaissance mission—Operation Windmill—around two HO3S-1 Sikorskys and one HTL-1 Bell.

The end came as part of the Navy's planned withdrawal from antarctic research support. The National Science Foundation is evaluating bids from private firms to replace the Navy's helicopter role, and next season will usher in what everyone expects will be a seamless transition to the new operator. The change will save money because the type and number of helicopters can be altered to meet research needs and because the contractor will be on duty only during the summer season.

Al Sutherland, NSF's onsite representative, wrote this in his weekly report: "The most touching event was the ceremony commemorating the last VXE-6 helo flight. Of all the services, I believe that the Navy is best when it comes to tradition, and this was certainly no exception. There was a gathering to watch the last helo come in—not a staged flight, a real job, right to the end. Then a Herc overflight." He read messages from well-wishers, including one from Neal Sullivan, director of NSF's Office of Polar Programs, who had written, in part, "I salute you as you commemorate today the Navy's conclusion of half a century of helicopter support of antarctic science. Those of you assembled here are the standard bearers of that history. You own it, and you deserve to be proud of it. Some of VXE-6's best seasons of helicopter performance have been among its most recent ones. The societal and economic forces that have made necessary the transition now under way are not of your doing. On behalf of the National Science Foundation and the nation, I thank you for your exemplary performance and extend best wishes to you all."

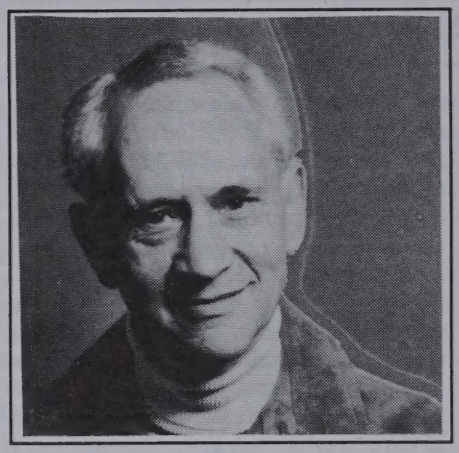
Oral History Program

We are planning an Oral History Program. There are thousands of Americans and Canadians out there who played a major role in exploring the polar regions—scientifically and geographically. Their stories have never been told, and unfortunately many have passed on, and the record of the role they played has been lost.

We need to interview them in a professional manner and process these interviews and archive them for future researchers and historians. The American Polar Society is an organization with the interest, talent and dedication to tackle a project like this. It can be our *raison d'être*—our *cause celebre*.

In a nutshell, we will have designated members assigned to conduct interviews on tape recorder with interviewees near their residence. We have a list of interviewees, all distinguished polar explorers and polar scientists who need to tell their story and have it preserved. It should prove a very enjoyable experience for the interviewer. There is some training involved that will be tailored as the case dictates. To begin with, we need to know those of our members who have *oral history experience* and whether they possess their own tape recorders. If you fit this category, please write to us and outline your qualifications. We will go from there.

The program comes with an expense tag, and we will be seeking grants. Money will be needed for travel, recording equipment, transcription services, archiving services, etc. We need a grantmanship chairman, and we will need a treasurer, since the money involved exceeds that needed to operation the American Polar Society. Again, we are looking for volunteers, and we need contributions to support this important project. Those interested in helping out can contact me by mail (Box 692, Reedsport, OR 97467) or call 541-759-3589 (fax, 541-759-3403; or e-mail to *iceman@presys.com*).



KU Professor Enjoyed Research

Longtime KU geology professor and Antarctic researcher Edward Zeller died Sunday

***Lawrence Journal-World*, by Michael Dekker**—Kansas University professor Edward J. Zeller was described Monday by a colleague as someone who saw more of the Antarctic than any other scientist.

"He was a garden hose of ideas," said Ernie Angino, professor of geology and civil engineering who knew Mr. Zeller for 40 years. "He had more ideas in five minutes than most people have in a year."

Mr. Zeller, professor of geology, died Sunday at a Boulder, Colo., hospital following a cerebral hemorrhage.

He was one of the first modern geologists to study and explore the Antarctic, making dozens of trips there over 38 years.,

In addition, "He helped a lot of young faculty get settled in and get started on projects without asking for anything in return."

One of the most distinguished scientists at KU, according to colleagues, Mr. Zeller had unusually broad and diversified career interests.

Although trained as a geologist, he engaged in active research in both chemistry and physics. For the first five years after receiving his doctorate degree, he investigated the geochemistry of uranium.

His 11-year survey of potential uranium deposits in Antarctica led him to visit more parts of the continent than any other person. In 1971, the Zeller Glacier on the continent was named after him.

He also made several research trips to northern polar areas, including Spitsbergen and the Greenland ice cap.

He was a member of the American Polar Society, the Antarctican Society and the Explorers Club.

Mr. Zeller also was involved in studies of disposal of radioactive waste, atmospheric pollution, sunspot cycles, climatic change on Earth and Mars, faulting in the mid-continental United States and hydrogen production in Kansas and other areas.

He joined the KU geology department staff in 1956 and became professor of geology in 1963 and professor of physics and astronomy in 1969.

No services are planned for Mr. Zeller, 70, who donated his body to the Kansas University Medical Center, Kansas City, Jan.

Survivors include his wife and longtime research partner, Gisela Dreschhoff.

Walter Sullivan, 78, Dies; Showed Science at Its Most Daring

***The New York Times*, 20 Mar 1996, p. D24, by John Noble Wilford**—Walter Sullivan, a science reporter and editor for *The New York Times* whose articles took him from pole to pole and ranged from the seabed to the shifting continents, and from the nuclear to the cosmic, died yesterday at his home in Riverside, Conn. He was 78. The cause was pancreatic cancer, his family said.

His bags always seemed to be packed, keeping him ready for the call of Antarctic expeditions, explorations of tunnels deep under Greenland's Arctic icecap, round-the-world experiments of the International Geophysical Year of 1957-58, rocket launchings at Cape Canaveral or the early searches for extraterrestrial intelligence.

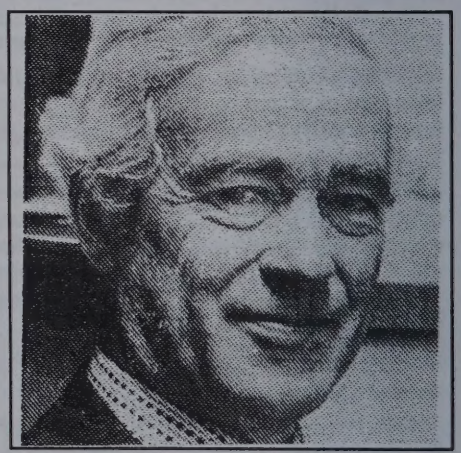
Through his charm and intelligence, Mr. Sullivan cultivated many of the world's leading scientists as friends and sources, and the result was uncounted "scoops," which he relished. Mr. Sullivan held the title of science editor until his official retirement in 1987. He continued to come into the office and write occasional articles until the last two months of his life, and his commitment to science writing never flagged.

Shortly after World War II as a reporter for the New York Times, Mr. Sullivan jumped at the chance to try science reporting with Operation Highjump, a Navy expedition to Antarctica under Rear Adm. Richard E. Byrd.

Though he had oscillated between the coverage of world politics and world science, Mr. Sullivan definitely shifted to science writing with his comprehensive reporting on the International Geophysical Year, which involved most of the world's nations in coordinated studies of Earth's interior, atmosphere and, as it turned out, the space above. During this period he traveled extensively in Antarctica chronicling the exploration of the continent as well as scientific discoveries in the field .

He also became a prolific book writer. His most notable ones were *Quest for a Continent*, about Antarctic exploration; *Assault on the Unknown*, about the geophysical year; *We Are Not Alone*, a best seller and prize-winning account of the search for extraterrestrial intelligence; *Continents in Motion*; *Black Holes: the Edge of Space, the End of Time*; and *Landprints*, a book about the geological history explaining American topography.

One of Mr. Sullivan's most coveted awards was the Public Service Medal of the National Academy of Sciences, which made him a nonvoting member of that body. The award had never before been presented to a journalist. The American Geophysical Union even



named its science writing award in honor of Mr. Sullivan.

He visited Antarctica seven times, the last time as a lecturer in 1993. A 30-mile mountain chain there was named the Sullivan Range in his honor. He was a Vice President of the American Polar Society at the time of his death.

Survivors include his wife, Mary; three children, Elizabeth of Cleveland, Catherine of Cambridge, Mass., and Theodore of Westport, Conn.; two sisters, Constance Carden of Manhattan and Jeanet Curtis of New Haven; and three grandchildren.

LETTERS TO THE EDITOR

"The U.S. 'Footprint' in Antarctica," *The Washington Post*, Excerpted from "Letter to the Editor," 2 April 1996, p. 12 (contributed by Peter Barretta)—Thomas E. Lovejoy's op-ed column "Only in Antarctic" truly warmed me. Having spent a total of 37 months on the continent, I too have been mesmerized by the romanticism of the great white expanse and the noble causes of science that can be studied there. Furthermore, I agree that "like any program, the U.S. Antarctic Program can probably benefit from some changes and planning."

To be blunt, the U.S. Antarctic Program maintains the fight to garnish the pristine waters of the continent with the untreated human waste of more than 1,000 people. In these waters, the fish, penguins and seals that Mr. Lovejoy speaks of are having their go at life's harsh Antarctic challenges. Now they have one more.

Across the sound from the outfall, scientists study an interesting number of subjects in the Dry Valleys. We already have an awareness of our impact there from a science project that studies the environmental impact of other science projects. All of these projects require field support, which is largely a combination of civilian ground and U.S. Navy helicopter support. This includes dedicated helicopter flights filled with subsidized liquor rations. At the rate of approximately $2,000 per helo hour.

We head inland to the real meat and potatoes of the program. I am referring to the millions spent developing the telescope program. True, the South Pole would be the prefect spot for 24-hour viewing in the dark of winter as well as in the height of the Antarctic summer. Too bad that it is so cloudy most of the time. Were weather records ever consulted before several million tax dollars were channeled into a telescope effort dependent on clear skies?—***Kari Geick*, Randolph, N.H.**

To the Editor

Kari Geick asks: "Were weather records ever consulted before several million tax dollars were channeled into a telescope effort dependent on clear skies?" We checked more than 30 years of daily weather records in planning the observatory at the South Pole. Although cloud cover is an unexceptional 50 percent, the extreme low temperature and near absence of humidity on the Antarctic plateau make the South Pole the best site on earth for a variety of infrared and radio observations.

The unique polar conditions have allowed for a wide range of new observations, including images of the impact of comet Shoemaker-Levy 9 on Jupiter, a survey of the carbon content of the Milky Way galaxy and studies of the structure of the Big Bang explosion. The hard work and personal sacrifice of the station crew, including Ms. Geick, have made the observatory a success.

Jeffrey B. Peterson
Professor of Physics
Carnegie Mellon University

Antony A. Stark
Center for Astrophysics
Harvard University
Pittsburgh, Pa.

To the Editor

U.S. RESEARCH IN ANTARCTICA, *The Washington Post*, "Letter to the Editor," 13 April 1996–U.S. Antarctic Program scientists depend on a cadre of dedicated staff, including Kari Geick ["The U.S. 'Footprint' in Antarctica," *The Washington Post,* Letters, April 2], who served as cook at South Pole Station and contributed other valuable support over several research seasons.

I must set the record straight on scientific and other misconceptions in Ms. Geick's letter. Astronomers planning observations from the South Pole consulted 30 years of weather records before starting their work. They found that the South Pole is the best observatory site on earth for infrared and radio astronomy. At these wavelengths, low humidity and low temperature are important, and cloud cover is not.

The estimate of $2,000 an hour for helicopter time is misleading. One helo hour actually costs $350, and special flights to transport liquor simply do not happen.

Finally, regarding Antarctica's environment, we strongly share a send of stewardship for this unique continent. McMurdo Station discharges sewage and food waste into well-mixed ocean waters. Natural processes then break the waste into components that are recycled in the nutrient-rich ecosystem. Monitoring suggests a negligible impact on local waters. Still, we're studying what total impact a change in sewage treatment would have on the region. Solvents and other potentially harmful chemicals do not enter the McMurdo sewage system. They are kept separate for recycling or shipment to the United States for disposal.

It is Antarctica's pristine state and unsurpassed quality as a natural laboratory that make the long trip there of such worth to scientists.

Cornelius Sullivan
Director, Office of Polar Programs
National Science Foundation
Arlington, Va.

To the Editor

SLED DOGS LOVE TO RACE, *The Washington Post*, "Letter to the Editor," 3 April 1996, p. A18 (contributed by Peter Barretta)—I want to express my appreciation to *The Post* for its coverage of the Iditarod, Alaska's premier dog sled race. I was assigned to Fort Greely, Alaska, from 1989 until 1992, and I followed—along with everyone else in Alaska—the unfolding drama and excitement of this 1,100-mile marathon.

Michael McGraw [letters, March 23], a resident of Silver Spring, saw fit to rain on Alaska's heritage and way of life in condemning the Iditarod. I am willing to bet that Mr. McGraw never rode in a dog sled, watched the start of finish of a dog sled race or spoke to a musher or a trail veterinarian. While the Iditarod has had dog fatalities, most are related to accidental encounters with moose. Other dogs have been known to die from undetectable health problems. Mushers, however, make every effort to bring only the best-trained, healthy dogs out on such a trail.

I would also be willing to bet that more dogs die on any given day in the metropolitan Washington area because their owners allow them to run free than die during an entire Iditarod race. Mr. McGraw would be better advised to pay attention to his own backyard than to focus on people and a way of life thousands of miles away.

Next year, please bring back the daily accounts of the Iditarod. The race is an important part of Alaskan heritage, and it should not be ruined by a few animal rights activists.

Michael E. Hokenson
Charlottesville, Va.

To the Editor

I enjoyed reading your article about Larry Gould in *The Polar Times*. It is a very interesting article that is well written. Please let me know when you want more dues. I don't want to miss an issue.

Prof. Peter B. Petersen, D.B.A.
John Hopkins University

To the Editor

I obviously do not condone Capt. Michael A. Healy's actions which resulted in his subsequent court-martial. I do think we should use restraint before we apply 20th century standards to a 19th-century man whom many consider the quintessential 19th-century sea captain.

Alaska in 1886 was the true wild frontier. Few laws with fewer enforcers made this territory a federal law enforcement agent's worst nightmare. It was into this arena that Capt. "Hell Roaring" Mike Healy took the cutter *Bear*. The passion with which he undertook his duties led a contemporary author to write, "To the law abiding, he is greatly respected and admired.... To the law disturbing people, Capt. Healy's name is terror."

Capt. Healy lived in a time when Captains were feared and crews were often recruited by press gangs and driven hard.

He might better be measured by what he did for native Alaskan people. After he saw the villages at Bear Island decimated from starvation the previous winter, Capt. Healy and his embarked surgeon carried out a bold plan to import reindeer from Siberia. This solved the three most pressing needs of the indigenous peoples: food, clothing and transportation.

His faults should perhaps be judged relative to their time in history. The positive accomplishments of Capt. Mike Healy are timeless.

Stephen M. Wheeler
Lt. Cmdr., USCG
Washington, D.C.

(Ed. Note: This letter is excerpted from the *Navy Times*, May 22, 1995. For more information, refer to *The Polar Times*, Vol. 2, No. 5, p. 9.)

To the Editor

Enclosed is another batch of clippings and printoff of computer news articles from America On-Line. I hope they are of value. I'll continue to save them and then mail them in batches.

Peter Anderson

Editor: We appreciate all the contributions you and others make. Without your help, *The Polar Times* would not be the magazine it is. Thank you!

To the Editor

Many thanks for your letter and the first issue of *The Polar Times*. I've read it cover to cover, and I am already looking forward to the next issue.

Ed Van Gelder
Westport, Conn.

To the Editor

Per your review in the last issue of *The Polar Times*, I discovered an error in Baughman's edition of Charles Passel's diary: The *Snow Cruiser* was loaded onto the *USMS North Star* in Boston rather than in Philadelphia. I have advised Mr. Baughman, and he plans to correct future editions.

Joseph Lynch Jr.
Pittsburgh, Pa.

To the Editor

I would...like to suggest that one or several members of The American Polar Society could produce a comprehensive index of all articles in both volumes 1 and 2 of *The Polar Times*. This index could include several keywords for each article, as well as a table of contents for all issues. The result would be an invaluable research aid for those who now would read sequentially through decades of back issues.

Although I have insufficient time to make a commitment to this project, I would encourage the American Polar Society to consider promoting it.

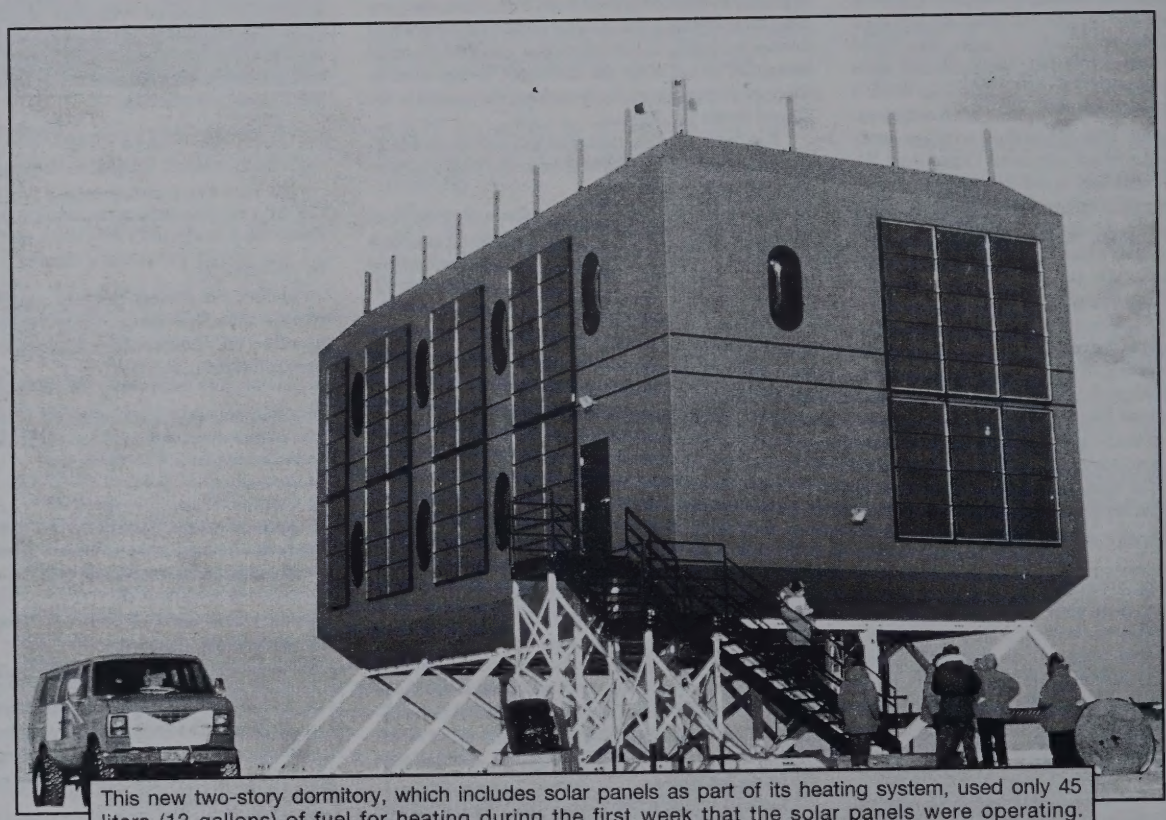
David Lipton
North Plainfield, N.J.

Editor: Good idea! We have all of the issues. Is there a society volunteer willing to take on the project? Please contact our secretary.

To the Editor

I was very interested to see the names of your Board of Governors, several of whom I knew,but have lost contact with, such as Martin Pomerantz and Waldo Lyon.

Graham Rowley
Ottawa, Ontario, Canada



NSF photo.

This new two-story dormitory, which includes solar panels as part of its heating system, used only 45 liters (12 gallons) of fuel for heating during the first week that the solar panels were operating. Incorporating advanced technology and design concepts, this building also includes a water-recycling system. The plumbing system is designed so that gray water from sinks, showers, and the laundry is reused to service the toilet system.

SOUTH POLE DOME

This facility and others like it will replace the South Pole Dome and is far cheaper to maintain and operate (see article, p. 16). Would the sign "The United States Welcomes You to the South Pole" hanging here spark the same surge of pride as it does now?